



90739

DECLARATION

SELECTED REMEDIAL ALTERNATIVE FOR THE WHEELER PIT SITE LA PRAIRIE TOWNSHIP, WISCONSIN

Statement of Basis and Purpose

This decision document presents the selected remedial action for the Wheeler Pit Site, La Prairie Township, Wisconsin, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record for this site.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Selected Remedy

The selected remedial action is a final remedy for the site. The purpose of this remedy is to eliminate or reduce migration of contaminants to the groundwater and to reduce the risks associated with exposure to the contaminated materials.

The major components of the selected remedy include:

- Construction of a landfill cover (cap) in compliance with Chapter NR 504.07, Wisconsin Administrative Code (WAC) landfill closure requirements;
- Consolidation of waste and soil from adjacent property onto original disposal area;
- Use of institutional controls on landfill property to limit land and groundwater use;
- Monitoring of groundwater to ensure effectiveness of the remedial action;
- Evaluating monitoring results to determine if additional action is necessary; and
- Monitoring private wells.

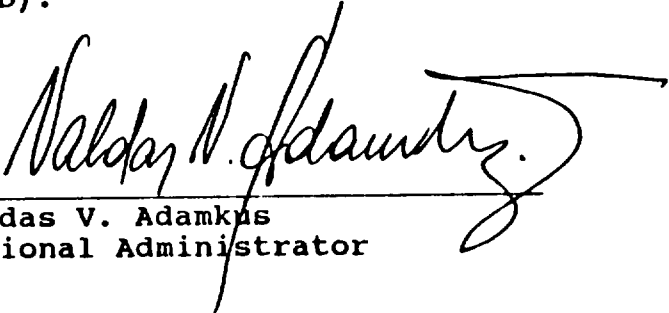
Statutory Determinations

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies, to the maximum extent practicable. However, because treatment of the principle threats of the site was not found to be practicable, this remedy does not satisfy the statutory preference for treatment as a principal element.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

State Concurrence

The State of Wisconsin concurs with the selected remedy. The Letter of Concurrence is attached to this Record of Decision (ROD).



Valdas V. Adamkus
Regional Administrator

Sept. 28, 1990.
Date



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Carroll D. Besadny, Secretary

Box 7921

Madison, Wisconsin 53707

TELEFAX NO. 608-267-3579

TDD NO. 608-267-6897

September 19, 1990

IN REPLY REFER TO: 4440

Mr. Valdas Adamkus, Regional Administrator
U.S. Environmental Protection Agency
230 South Dearborn Street
Chicago, IL 60604

SUBJECT: Selected Superfund Remedy, Wheeler Pit, La Prairie Township,
Wisconsin

Dear Mr. Adamkus::

The Department is providing you with this letter to document the State of Wisconsin's concurrence on the proposed remedy for the Wheeler Pit Superfund site. The proposal, as identified in the draft Record of Decision, includes the following:

Alternative 3B: Enhanced Capping

This alternative provides for the hazardous substances to be consolidated into the original disposal area and capped with a new clay cap according to the requirements of NR 504.07, Wisconsin Administrative Code. In addition to the capping requirement, institutional controls will be implemented at the site. These controls will include a fence around the disposal site and deed restrictions on future land uses on the disposal site. Long-term ground water monitoring will occur to evaluate the performance of the remedy, as well as to determine if any additional actions are necessary. Long-term operation and maintenance of the cap will be required, in addition to sampling of private wells.

Estimated Costs: Construction - \$829,600
Operation and Maintenance - 137,300/year
30-Year Total Present Worth - \$2,940,000

The Department concurs with the selected remedy described above and presented in the Record of Decision for this site.

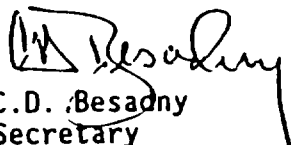
The State of Wisconsin will contribute 10 percent of the remedial action costs associated with the Wheeler Pit site if the potentially responsible parties (PRPs) do not agree to fund the remedy. This assurance is provided on the condition that the U.S. EPA will pursue legal action against the PRPs, to the extent feasible. The State's preferred enforcement approach is for U.S. EPA to issue a unilateral order to the PRPs requiring them to undertake remedial design and remedial action of the selected remedy.

Mr. Valdas Adamkus - September 19, 1990

We also understand that our staff will continue to work in close consultation with your staff during the remedial design and remedial action phases of the Wheeler Pit site.

Thank you for your support and cooperation in addressing this contamination problem at the Wheeler Pit site in La Prairie Township. If you have any questions regarding this matter, please contact Mr. Paul P. Didier, Director of the Bureau of Solid and Hazardous Waste Management.

Sincerely,


C.D. Besadny
Secretary

CDB:MS:ps
d:\swm\wlrpt.mrs

cc:

Lyman Wible - AD/5
Linda Meyer - LC/5
Paul P. Didier - SW/3
Joe Brusca - SD
Mike Schmoller - SD
→ Mary Pat Tyson - EPA
Mary Beth Novy - EPA
Mark Giesfeldt - SW/3
Sue Bangert - SW/3

**RECORD OF DECISION SUMMARY
WHEELER PIT SITE
LA PRAIRIE TOWNSHIP, WISCONSIN**

1.0 SITE NAME, LOCATION, AND DESCRIPTION

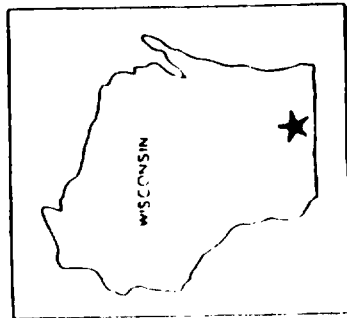
The Wheeler Pit site is located in rural La Prairie Township approximately 1-1/2 miles east of the City of Janesville, Wisconsin, population 51,000, directly northwest of the intersection of County Highway O (Old Delavan Road) and County Highway J. (See Figure 1) The site (Wheeler Pit) is within a physical depression approximately 50 feet deep and spanning an area of approximately 35 acres, which previously operated as a sand and gravel pit. The site, as originally defined by General Motors Corporation in their Notification of Hazardous Waste Site, consists of 3.82 acres of land in the southeast portion of Wheeler Pit which was used as a disposal area for industrial wastes for approximately 18 years.

The base of the gravel pit is fairly flat, and the sides slope steeply upwards, particularly to the north and east. The ground surface is sloped for an access roadway from County Highway J to the floor of the gravel pit. The road runs around the southern and western edges of the site.

The soils under the site are generally glacial outwash sands and gravels. A clay layer was found near the ground surface south of the site as well as northeast of the site. In the disposal area, the clay layer did not exist or was removed during sand and gravel mining operations and was replaced by the waste material.

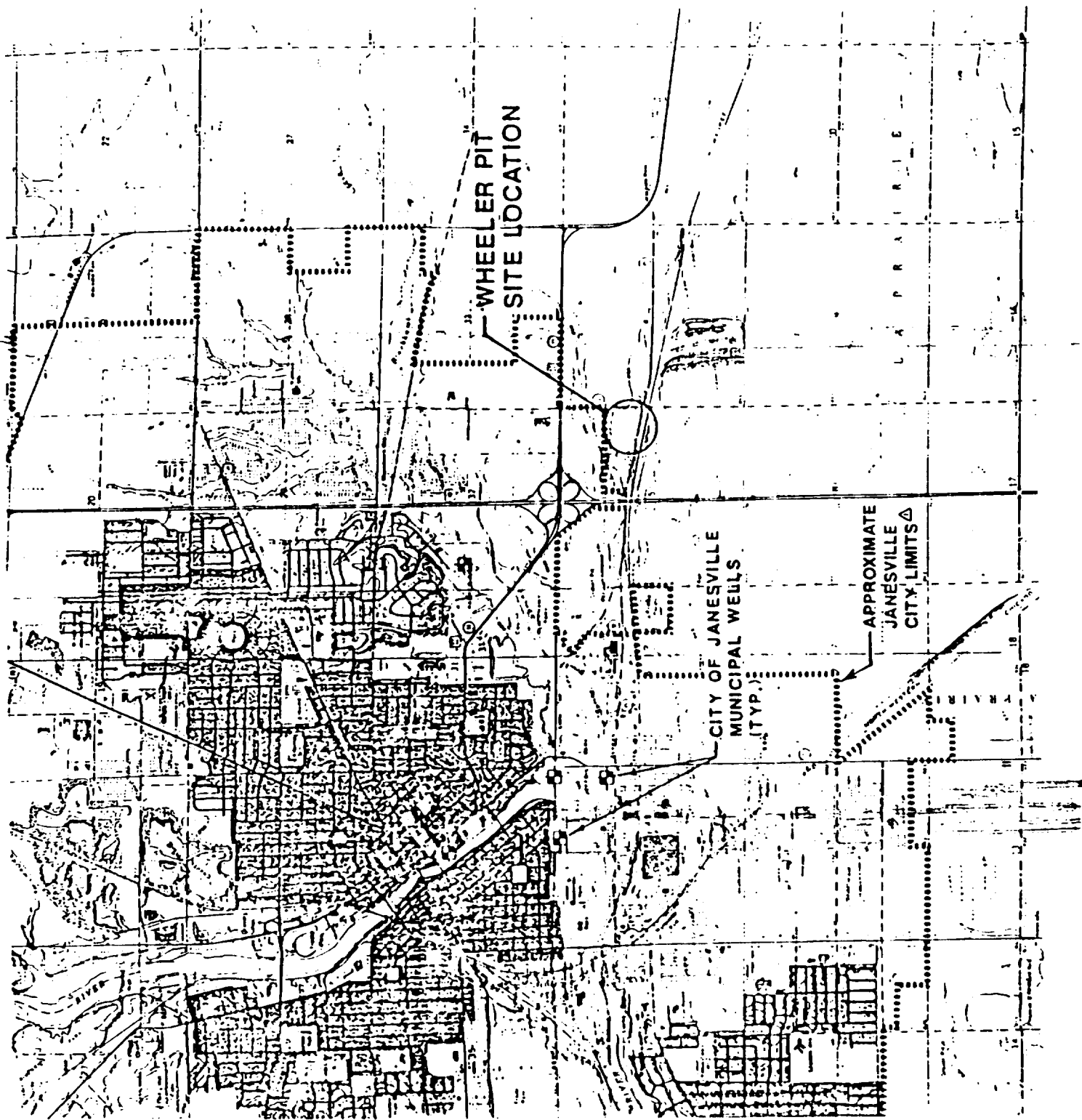
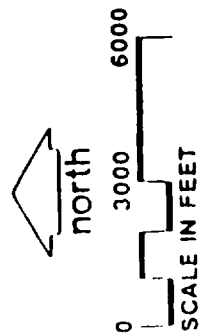
The area surrounding the site is mainly used for agriculture and for sand and gravel mining. There is a small asphalt plant on property owned by Frank Brothers, Inc., which is north of and adjacent to the property on which the site is located. Tanks and piping associated with this operation encroach on the northern portion of the site. There is a well located on this property, but is not currently in use. Along the eastern site boundary on County Highway J, the Rock County Highway Department maintains a salt storage facility. No water supply well exists on this property. West of the site, in the western portion of Wheeler Pit, a fertilizer company, Green-Rock FS Cooperative, leased a parcel of land in 1962. The buildings and equipment of the fertilizer plant were demolished and removed in early 1989.

The Rock River is located approximately 2 miles west of the site and flows in a southerly direction. The river is mainly used for recreational purposes. Groundwater beneath the site in the upper aquifer flows to the southwest at a rate ranging from 30-365 feet/year. The upper aquifer is composed of outwash sand and gravel deposits, and regional information indicates that this sand and gravel outwash is at least 200 feet thick beneath the site. This aquifer is a major source of drinking water in the



SITE LOCATION MAP

FIGURE 1



Janesville area. The aquifer below the sand and gravel outwash is composed of sandstone and is most likely hydraulically connected to the upper aquifer. The nearest municipal water supply well is the City of Janesville Municipal Well No. 8, which is located approximately 6,000 feet northwest of the site. Private wells located near the site are 900 feet south, 1,000 feet southwest, and just across County Highway J to the east of the site. These wells are screened in the upper aquifer. The site does not lie in wetlands or a floodplain.

A more complete description of the site can be found in the RI/FS Reports.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Wheeler Pit property was purchased in 1900 by the Janesville and Southeastern Railway Company, predecessor in interest to the Chicago, Milwaukee, St. Paul and Pacific Railroad, which filed for bankruptcy in the 1970s. Upon completion of the bankruptcy proceedings, CMC Real Estate Corporation, successor to the Railroad, acquired ownership of the property on which the site is located. In early 1990, CMC Real Estate Corporation reformed to become CMC Corporation. CMC Corporation is the current owner of the property on which the site is located. The Wheeler Pit property was originally bought to provide sand and gravel for the Railroad. It has been reported that the Railroad also used Wheeler Pit for refuse disposal.

In 1956, General Motors Corporation (GM) leased a 3.82 acre portion of the pit from the Railroad as a general waste disposal site. From 1956 to 1960, GM disposed of general refuse at the site. From 1960 through 1974, GM disposed of paint spray booth sludges, residue from the part hanger stripping system, clarifier sludges and powerhouse coal ashes from its automobile assembly plant in Janesville. The disposal site was reported to be approximately 400 feet long, 250 feet wide and 8 feet deep. An estimated 22.3 million gallons of organic and inorganic sludges were disposed of at the site, as reported by GM to the United States Environmental Protection Agency (U.S. EPA) in GM's Notification of Hazardous Waste Site form submitted in June 1981. The Railroad also filed a Notification of Hazardous Waste Site.

At the site, waste was disposed of by depositing it within a diked area and allowing it to spread freely. The material was quite dense, so that compaction equipment was not used. The waste was deposited in layers, alternating between layers of sludge and layers of coal ash. Trucks were then able to drive over the previously filled area. The dike, which contained the materials, was located on the north and west sides of the disposal area. In August 1981, some liquid seepage was noticed on the ground surface outside the disposal area. The Remedial

Investigation (RI) results showed that the ash/waste boundary extends beyond the original disposal boundary to the north and northwest, indicating that the waste spilled over the dike to some extent during the active life of the site.

At the request of La Prairie Township, disposal at the site was discontinued in 1974. The disposal area was covered and closed during the fall of 1974 and summer of 1975 in general accordance with guidelines provided by the Wisconsin Department of Natural Resources (WDNR) in a letter dated May 6, 1974. WDNR required that GM implement a groundwater monitoring program; generate a site topographic map; stabilize surface water runoff; and grade, cover and re-vegetate the site.

Groundwater monitoring was performed by GM on an irregular basis after closure in 1974. In response to complaints concerning potential groundwater quality impacts related to waste disposal practices at the site, WDNR and GM sampled on-site monitor wells and certain private water supply wells in April 1981. Elevated levels of trichloroethylene, chromium, zinc and barium were noted in both WDNR and GM samples taken on site. Results from these analyses and GM's January 1981 sampling round were used by U.S. EPA in the Hazard Ranking System (HRS) evaluation of the site performed in April 1983. The site was placed on the National Priorities List on September 21, 1984. This NPL listing was published in 49 Federal Register 37070.

In June 1987, two known PRPs for the site, GM and CMC Corporation (CMC), received special notice letters, which provided them with the opportunity to conduct the Remedial Investigation and Feasibility Study (RI/FS). GM and CMC signed a consent order with U.S. EPA and WDNR which became effective December 1, 1987. This order outlined the scope and schedule for the RI/FS at the Wheeler Pit site. GM and CMC assumed responsibility for the site investigation, and Warzyn Engineering Inc., under contract to the PRPs, conducted the RI/FS. U.S. EPA and WDNR oversaw activities at the site.

RI field activities began in September 1988 and included two phases. Activities included digging and sampling of four test pits, installation of six monitor wells (three nests), hydraulic conductivity testing, groundwater level monitoring and groundwater sampling. Phase II activities included three additional test pits, an electromagnetic survey to help determine the waste boundary and volume, waste/soil borings and sampling, shallow soil borings, surface soil sampling, four additional monitor wells (two nests), and a second round of hydraulic conductivity testing and groundwater sampling. Figure 2 shows the locations of the monitoring wells, soil borings, surface soil samples and test pits. The RI Report describing these activities was finalized on March 1, 1990. An Endangerment Assessment was also prepared and was included as part of the RI

Report.

In September 1989, it was decided to streamline the remainder of the RI/FS based on the straightforward nature of the site. The number of alternatives considered for this site was reduced very early in the FS process, and all groundwater alternatives were eliminated from the list, based on the levels of contaminants detected in the groundwater and the limited extent of contamination. Four alternatives remained and were evaluated in the FS Report. The Public Review Draft of the FS Report was submitted on May 30, 1990.

U.S. EPA has not yet sent out special notice letters for Remedial Design and Remedial Action (RD/RA) to the PRPs. These should be issued after the time that this ROD is signed.

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

A community relations plan was developed in 1988 to document community concerns and to plan an information strategy. U.S. EPA has held one public meeting and one informal availability session to keep the public informed about the activities at the site. U.S. EPA has also sent out fact sheets at various times during the RI/FS process.

As part of its community relations program, U.S. EPA has maintained two information repositories: one is at the Janesville Public Library, 316 South Main Street, Janesville, Wisconsin; and the other is at the La Prairie Township Clerk's Home/Office, 915 Sharon Road, Janesville, Wisconsin. All formal reports submitted by the PRPs during the Wheeler Pit RI/FS are available at these locations. The repositories also contain documents prepared by U.S. EPA, such as fact sheets and the Proposed Plan, as well as documents prepared by U.S. EPA's oversight contractor.

U.S. EPA notified the local community, by way of the Proposed Plan, of the recommendation of a remedial alternative for the Wheeler Pit. To encourage public participation in the selection of a remedial alternative, U.S. EPA scheduled a public comment period from July 12 to August 11, 1990. This public comment period was extended to August 24, 1990. Additionally, on August 8, 1990, U.S. EPA held a public meeting to discuss the recommended remedial alternative and the other alternatives

FIGURE 2

LEGEND



TANKS



BUILDING



FENCE LINE



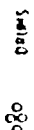
ACCESS ROAD



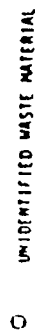
TREES



GROUND SURFACE CONTOUR (CONTOUR INTERVAL: 2 FT.)



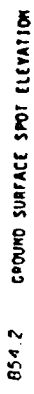
DRUMS



UNIDENTIFIED WASTE MATERIAL



MANHOLE



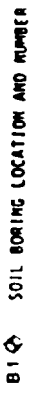
GROUND SURFACE SPOT ELEVATION



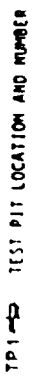
STORAGE FACILITY



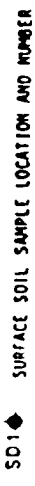
MONITORING WELL LOCATION AND NUMBER



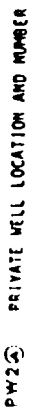
SOIL BORING LOCATION AND NUMBER



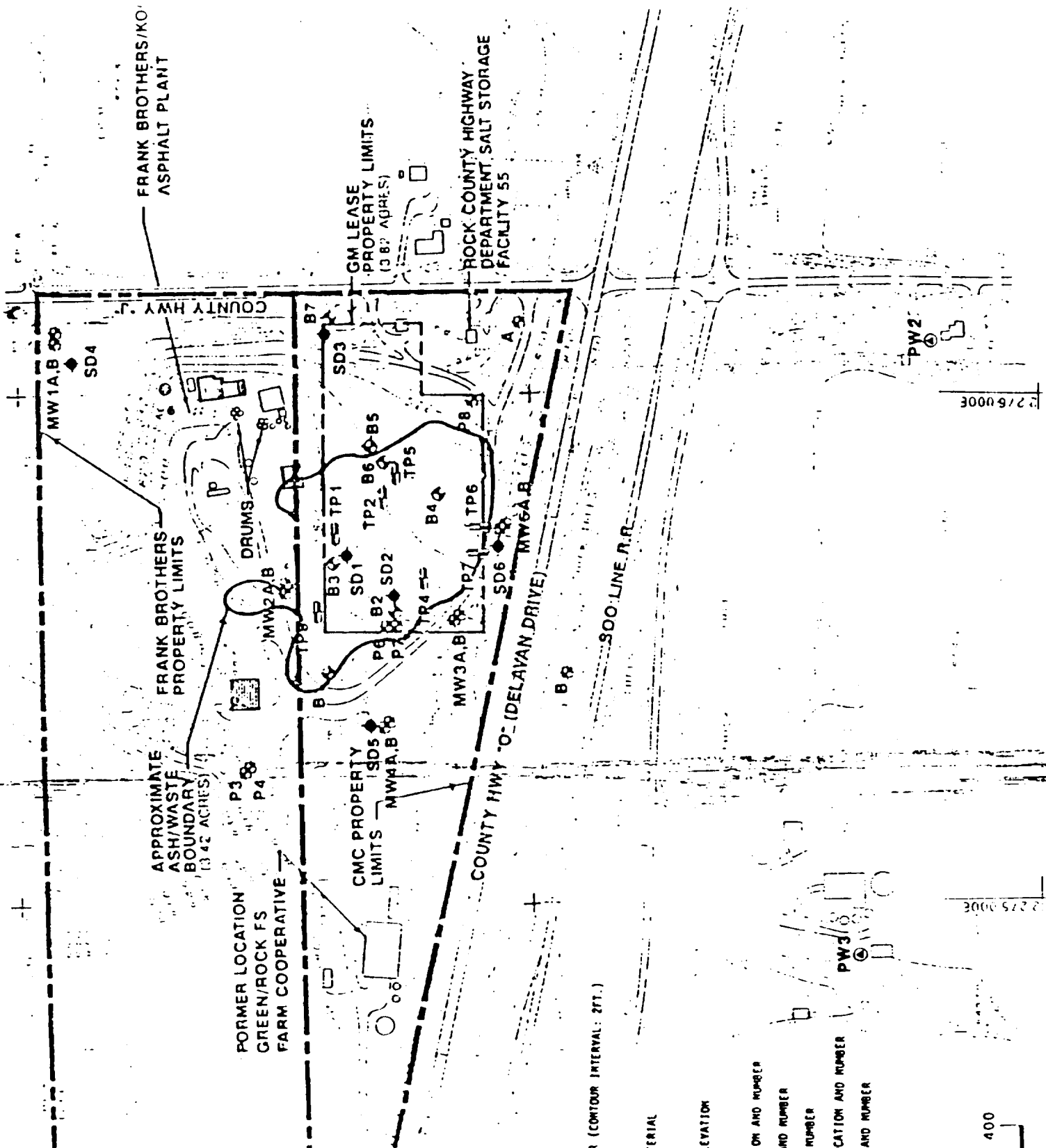
TEST PIT LOCATION AND NUMBER



SURFACE SOIL SAMPLE LOCATION AND NUMBER



PRIVATE WELL LOCATION AND NUMBER



identified and evaluated in the FS. A transcript of this meeting is included as part of the Administrative Record for the Wheeler Pit site. U.S. EPA's responses to comments received during this public meeting and to written comments received during the public comment period are included in the Responsiveness Summary which is attached to this ROD.

Press releases were sent to Janesville and Rockford, Illinois, media, and advertisements were placed in the Janesville Gazette concerning the availability session, public meeting and comment period.

4.0 SCOPE AND ROLE OF RESPONSE ACTION

The selected remedy for the Wheeler Pit site is intended to be the final response action at the site. The remedy will combine source control, site access and land-use restrictions, and long-term groundwater monitoring. In summary, the selected remedy will include consolidating waste that is currently on adjacent property onto CMC property, removing trees and vegetation from the landfill, installing an NR 504.07 cap, providing for institutional controls including fencing the site and restricting site use via land use restrictions, and conducting long-term groundwater monitoring. The components of the selected remedy are described in greater detail in Section 9.0. This remedy will be subject to a review in five years since waste material above health-based levels will be left on site.

No principal threat which warrants treatment at the site has been identified. The level of contamination remaining in the waste on site can be reliably controlled over time through engineering and institutional controls; therefore, treatment is not practicable. However, the waste mass in place represents a potential threat through contact and a release of contaminants to the environment, and the present and potential future groundwater contamination may be a threat to the environment and public health. This remedial action will address these concerns.

During the groundwater monitoring program, if it is shown that the groundwater conditions become worse or do not improve over a reasonable period of time, U.S. EPA may evaluate options for a groundwater treatment program. Whether additional measures are needed will be determined by U.S. EPA and the WDNR as discussed in Section 9.0.

5.0 SUMMARY OF SITE CHARACTERISTICS

The source of contamination at the site is the estimated 22.3 million gallons of sludges and coal ash which GM disposed of in Wheeler Pit. The disposal area was located in a portion of the former sand and gravel pit and was not lined. According to the results of the RI, the waste/fill covers an approximately 3.4

acre area and ranges from 0-23 feet in thickness. At its deepest point the waste is approximately 10 feet above the water table. The estimated volume of waste is 60,600 cubic yards (cu yds). The predominant contaminants in the waste materials are toluene, ethylbenzene, xylenes, phthalates, polynuclear aromatic hydrocarbons (PAHs) and metals. Concentration ranges for organic compounds detected in test pit waste samples are as follows:

- toluene, ethylbenzene, xylenes: total concentrations ranging from 3,302 ug/kg to 508,000 ug/kg.
- phthalates: detected as individual compounds at concentrations ranging from 450 ug/kg to 630,000 ug/kg.
- PAHs: total PAH concentrations ranged from 9,520 ug/kg to 152,000 ug/kg.

Toluene, ethylbenzene and xylenes are volatile organic compounds (VOCs). VOCs are compounds which tend to evaporate when exposed to air. Phthalates are semi-volatile organic compounds associated with plastics and plastic-making processes. PAHs are semi-volatiles derived from coal and oil tars and the incomplete combustion of carbonaceous materials.

Nine metals were detected in test pit wastes at maximum concentrations that were at least 10 times the background soil concentrations. They are (with maximum concentration):

antimony (20 mg/kg)	lead (3,130 mg/kg)
barium (14,500 mg/kg)	mercury (0.28 mg/kg)
cadmium (20.2 mg/kg)	nickel (608 mg/kg)
total chromium (1,250 mg/kg)	zinc (13,100 mg/kg)
copper (151 mg/kg)	

The waste/fill material also contains metal, concrete and wood debris, chunks of paint sludge, and a variety of other materials such as wire, insulation and bricks.

The present cover at the site consists of 0-6 inches of sand, ash or silt plus 0-2 inches of topsoil. This cover is vegetated with grass and trees. Phthalates and three metals were detected in surface soil both on-site and southwest of the waste disposal boundary. The highest phthalate concentration detected was 7,200 ug/kg, and cadmium and lead were detected at levels 2-3 times background. The range of background concentrations for cadmium was .10 -.36 mg/kg and for lead was 10.3 - 34.9 mg/kg.

Approximately 27,600 cu yd of contaminated subwaste soil in the 3.4-acre area are present beneath the waste. Concentrations of contaminants in subwaste soil were low relative to the concentrations in the test pits. Staining of subwaste soils was observed, but it only extended approximately 6 inches below the

waste, in the areas sampled.

As stated earlier, the groundwater flows to the southwest at a rate of 30-365 feet per year. Based on the wells sampled at the site, the groundwater contamination appears to be limited in terms of contaminant concentrations and extent. However, the plume leaving the site was not well-defined. Chlorinated benzene compounds -- such as 1,4-dichlorobenzene, 1,3-dichlorobenzene and chlorobenzene -- were detected in two downgradient water table wells, as were elevated concentrations of certain metals. 1,4-dichlorobenzene was detected at 24 ug/l at a well adjacent to the site and at 25 ug/l at a well further downgradient. Arsenic, chromium, iron and manganese were detected in downgradient wells at concentrations which exceed Preventive Action Limits (PALs). PALs are Wisconsin State groundwater standards and are 10 or 20% of Wisconsin's Enforcement Standards (ES), which are generally equivalent to Federal Maximum Contaminant Levels (MCLs). MCLs are drinking water standards set forth in the Safe Drinking Water Act (SDWA). In addition, PALs are a trigger by which the State of Wisconsin contemplates taking an action at a site, which can range from no action to active remediation. Manganese exceeded its ES at the furthest downgradient well. Maximum concentrations of these metals in the groundwater and the corresponding PAL and ES are as follows (for well locations see Figure 2):

Arsenic:	32 ug/L in Well MW03A
	PAL - 5.0 ug/L ES - 50.0 ug/L
Chromium:	5.8 ug/L in Well MW04A
	PAL - 5.0 ug/L ES - 50.0 ug/L
Iron:	9,120 ug/L in Well MW03A, and 170 ug/L in Well MW03B
	PAL - 150 ug/L ES - 300 ug/L
Manganese:	818 ug/L in Well B, and 158 ug/L in Well MW03A
	PAL - 25.0 ug/L ES - 50.0 ug/L

The levels of 1,4-dichlorobenzene detected do not presently exceed PALs or ESs, since the current standards are 150 ug/L for PALs and 750 ug/L for ESs. It is expected, however, that the PAL will be lowered to 15 ug/L and the ES will be 75 ug/L as of October 1, 1990. Under these new standards, 1,4-dichlorobenzene will exceed its PAL at MW03A and Well B.

Background groundwater quality indicates elevated total dissolved solids, zinc and nitrate concentrations upgradient from the site. However, elevated alkalinity, total dissolved solids, specific conductance and oxygen deficient conditions in downgradient groundwater indicate groundwater impacts have resulted from the site as well as from possible upgradient sources. Nitrates exceeded ESs at 10 wells, and total dissolved solids exceeded ESs at the site in 4 wells, but this may be in part due to background conditions.

At this time, groundwater seems to be the primary potential contaminant migration pathway. However, based on available data, groundwater contamination appears to be limited. The closest downgradient private well is 900 feet away. It was sampled by the WDNR in 1984 and 1985 for volatile organic compounds (VOCs), and the analyses determined no VOCs were present. No analysis for metals was done. Three municipal wells are approximately 2 miles west of the site, with the nearest well 6000 feet northwest of the site.

The RI Report states that reducing conditions in the groundwater may be partially responsible for the metals present in the groundwater. These reducing (oxygen deficient) conditions may increase the solubility of such metals as arsenic and iron and to some extent manganese, causing the release of these metals from the subwaste soils. As the reducing conditions diminish away from the site, the affected metals will readsorb to the soils. While this theory may partially explain the presence of certain metals in the groundwater, U.S. EPA and WDNR still believe that, based on groundwater data, these and other metals not affected by the oxidation/reduction chemistry, as well as the semi-volatile chlorinated benzene compounds, are migrating from the waste at the site.

Other attenuating mechanisms identified in the RI Report were adsorption of organic and inorganic contaminants to sludge and fly ash; physical encapsulation of liquid and volatile contaminants by dried paint sludges, which would reduce the interaction of waste contaminants with percolating water; and biochemical degradation of organic contaminants in the waste, evidenced by possible reducing conditions in one monitoring well (MW03A) and observations of septic odors from the waste material during soil borings. All of these mechanisms may be contributing to some undetermined extent to limit the migration of organics and inorganics found at elevated levels in the waste. However, the extent of these mechanisms in the waste and the permanence of these conditions is not certain.

6.0 SUMMARY OF SITE RISKS

In accordance with the Administrative Order by Consent, the PRPs prepared the baseline risk assessment during the RI/FS. This assessment, called an Endangerment Assessment in the RI Report (chapter 8), followed the guidance provided in U.S. EPA's Superfund Public Health Evaluation Manual. U.S. EPA has since issued a new risk assessment guidance document called Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual. This more recent guidance was not used.

In order to calculate actual and potential risks to human health and the environment posed by the Wheeler Pit site,

indicator chemicals were selected to represent the contamination at the site. This list of indicator parameters is only a subset of the constituents of concern identified during the RI. The indicator chemicals which were identified for each medium, with the maximum concentration at which they were found, are listed below:

Surface Soil

Cadmium - 1.0 mg/kg
 Butylbenzyl phthalate (BBP) - 7,200 ug/kg
 Bis(2-ethylhexyl)phthalate (BEHP) - 160 ug/kg

Waste/Subwaste Soils

Lead - 3130 mg/kg
 Cadmium - 20.2 mg/kg
 Naphthalene - 110,000 ug/kg
 BBP - 630,000 ug/kg
 BEHP - 47,000 ug/kg
 Ethylbenzene - 53,000 ug/kg
 Xylenes - 370,000 ug/kg

Groundwater

BEHP - 3.0 ug/L
 1,4-Dichlorobenzene - 25 ug/L
 Ethylbenzene - 0.8 ug/L
 Xylenes - 6.0 ug/L

After evaluating potential current and future exposure pathways at the site, three exposure scenarios were chosen to represent possible risks posed by the site. One considers current site conditions, and two assume hypothetical future site conditions. These exposure scenarios are:

1. Trespasser Scenario: A trespasser would be exposed to contaminated surface soils currently on site via ingestion and dermal absorption. This scenario assumed that a child would trespass twice a week, eight months/year, for 10 years.
2. Groundwater Scenario: Future site occupants would drink contaminated water from a private well. This scenario assumed that a person would drink 2L of water every day for a lifetime of 70 years.
3. Construction Worker Scenario: Future construction workers would build on the site and would be exposed directly to waste via ingestion, dermal absorption, and inhalation of fugitive dust and VOCs. This scenario assumed that a worker would be exposed eight hours/day, seven days/week, for six months.

Using these scenarios, risk numbers are calculated for each contaminant. These calculations factor in the amount of exposure assumed, the dose of the chemical received (based on the concentrations found during the RI), and a constant set for each individual chemical which quantifies the toxicity of that chemical. Different constants and equations are used based on whether or not the chemical is carcinogenic. The constant for a

carcinogenic chemical is called a slope factor, and the constant for a noncarcinogen is called a reference dose.

The results of these calculations are a cancer risk number for carcinogenic risks and a Hazard Index number for noncarcinogenic risks. The cancer risk number is expressed in scientific notation and represents a probability of getting cancer. For example, $1.0\text{E}-06$ represents a risk of one additional case of cancer per 1 million people, under the exposure conditions assumed. U.S. EPA considers this $1.0\text{E}-06$ number as a point of departure when determining risk at a site. Risks calculated to be less than this value are considered protective of human health and the environment, while risks between $1.0\text{E}-04$ and $1.0\text{E}-06$ are within a range acceptable to U.S. EPA but may not be considered protective due to site-specific conditions. Risks greater than $1.0\text{E}-04$ are unacceptable.

The Hazard Index (HI) number generated is interpreted differently than the cancer risk number. To evaluate risk at a site due to noncarcinogenic contaminants, U.S. EPA has determined that a Hazard Index less than 1 is protective, while a Hazard Index greater than 1 is not protective of human health and the environment.

Table 1 summarizes the cancer risk numbers and Table 2 summarizes the hazard index values calculated for each chemical under each scenario and exposure pathway. The numbers listed in these tables represent the maximum exposure conditions by using the greatest concentration of a chemical found in each media. The cumulative risk for each scenario is included beneath each table.

TABLE 1

MAXIMUM CALCULATED CANCER RISKS

IND. CHEM	TRESPASS INGEST	TRESPASS DERMAL	GRNDWTR INGEST	WORKER INGEST	WORKER DERMAL	WORKER DUST	WORKER VOCS
BEHP	3.7E-10	1.9E-10	1.3E-06	6.7E-09	1.1E-08	1.5E-09	NA
1,4Dichlor	NA	NA	1.9E-05	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	2.8E-07	NA
*TOTALS:	5.6E-10		2.0E-05			3.0E-07	

TABLE 2

MAXIMUM CALCULATED HAZARD INDEX SCORES

IND. CHEM	TRESPASS INGEST	TRESPASS DERMAL	GRNDWTR INGEST	WORKER INGEST	WORKER DERMAL	WORKER DUST	WORKER VOCS
Lead	NA	NA	NA	2.3E-02	3.7E-02	1.7E-02	NA
Xylenes	NA	NA	9.3E-05	1.9E-06	3.1E-05	9.8E-06	6.8
Cadmium	1.7E-04	8.4E-05	NA	2.0E-04	3.4E-04	4.6E-05	NA
BEHP	1.4E-06	6.8E-07	4.7E-03	2.4E-05	3.9E-05	5.5E-05	NA
BBP	6.1E-06	3.0E-06	NA	3.2E-05	5.3E-05	7.2E-06	NA
Napthalene	NA	NA	NA	2.8E-06	4.6E-06	6.4E-07	NA
Ethylbenz	NA	NA	2.5E-04	5.4E-06	8.8E-05	1.2E-06	1.5
*TOTALS:	2.7E-04		5.0E-03			8.4	

* - The totals at the bottom of each table represent the total risk for each scenario considered. This risk is the sum of all the individual chemical's risk for all pathways of exposure (i.e. ingestion, dermal, etc.) under each scenario considered.

In summary, the risk assessment highlights two potential future risks at the site (refer to Tables 1 and 2):

1. a possible carcinogenic risk of $2.0\text{E-}05$ for groundwater if a well is placed on site; and
2. a potential noncarcinogenic risk for a construction worker who inhales VOCs while digging in the waste. (Average HI = 1.1, Maximum HI = 8.3)

In addition, if no action is taken at the site, there is the potential for erosion to continue to degrade the present cover and eventually expose more of the waste. If this occurs, a trespasser at the site under these conditions might encounter a risk similar to that posed to a construction worker.

6.1 UNCERTAINTIES

In addition to the chemicals considered in the endangerment assessment, there are several other contaminants present in the waste and groundwater which were not included as indicator chemicals. These were either screened out when the indicator chemicals were selected or did not have known slope factors or reference doses. The most notable of these omissions is arsenic in the groundwater. Arsenic was detected in one downgradient well in both phases of groundwater sampling at levels of 29 ug/L and 32 ug/L. When U.S. EPA calculated the risk for this contaminant using the assumptions made in the endangerment assessment, the carcinogenic risk is $1.9\text{E-}03$. According to the current well placement and sampling data, this risk would be present only if a well were placed on site or in very close proximity to the site, or if groundwater contaminated at these levels migrated from the site to an off-site water supply well.

6.2 ENVIRONMENTAL RISKS

No critical habitats or endangered species are affected by contamination at the site.

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

7.0 DESCRIPTION OF ALTERNATIVES

In September 1989, it was decided to streamline the remainder of the RI/FS based on the straightforward nature of the site. The number of alternatives considered for this site was reduced very early in the FS process, and all groundwater alternatives were eliminated from the list, based on the levels of contaminants detected in the groundwater and the limited extent of contamination. The four remaining alternatives

evaluated in the FS Report are source control actions which rely on natural attenuation to remedy the groundwater. Source control will address the area of contamination (AOC), which is defined by the ash/waste boundary as denoted in Figure 2. The remediation goals are to reduce the threat of direct contact with the waste, to reduce the infiltration of water into the waste which might lead to further groundwater contamination, and to achieve PALs where technically and economically feasible.

The four alternatives are summarized in Table 3 and are described in greater detail in the text which follows. The major applicable or relevant and appropriate requirements (ARARs) which were identified for these alternatives will be discussed in Section 8.0 - Comparative Analysis of Alternatives, under Compliance with ARARs.

TABLE 3
SUMMARY OF ALTERNATIVES AND COSTS

<u>ALTERNATIVE</u>	<u>CAPITAL</u>	<u>COST</u>	
		<u>*O&M</u>	<u>PRESENT NET WORTH**</u>
	\$0	\$0	\$0
ALTERNATIVE 1: NO ACTION			
ALTERNATIVE 2: COVER REPAIR AND ACCESS RESTRICTIONS	\$42,000	\$137,000 per year	\$2,084,000
-Repair present soil cover in needed areas			
-Fence site			
-Institutional controls			
-Groundwater and cover monitoring			
ALTERNATIVE 3: ENHANCED CAPPING	Cap A \$522,500	\$137,300 per year	Cap A \$2,633,000
-Consolidate waste into original disposal area	Cap B \$829,600	"	Cap B \$2,940,000
-Install one of three cap systems proposed	Cap C \$1,226,500	"	Cap C \$3,337,000
-Fence site			
-Institutional controls			
-Groundwater and cap monitoring			
ALTERNATIVE 4: TREATMENT BY FIXATION		Annually:	
-In-situ fixation	\$11,563,900	1st 5 yrs \$137,000	\$12,731,000
OR	OR	2nd 5 yrs	OR
-Excavation and fixation	\$12,223,600	\$73,800 last 20 yrs \$42,100	\$13,391,000
-Cap treated waste			
-Institutional controls			
-Groundwater and cap monitoring			

* - These Operation and Maintenance (O&M) costs are based on a conservative groundwater monitoring program.

** - Present net worth cost is calculated over a 30 year period at a 5% discount rate.

Alternative 1: No Action

U.S. EPA is required to evaluate a no-action alternative at every Superfund site. It is used as a basis of comparison during the evaluation of other alternatives. Under this alternative, U.S. EPA would take no further action at the site to monitor, control, treat, or otherwise cleanup contamination. The cost of this alternative is zero. However, since waste is being left on site, a five-year review of conditions at the site would be required.

This alternative will not reduce the threat of direct contact with the waste and will not reduce the permeability of the present cover.

Alternative 2: Cover Repair and Access Restrictions

Under this alternative, the existing cover would be repaired in select areas in accordance with the closure requirements provided in 1974 in a letter to GM from WDNR. These requirements stated that at a minimum, "adequate earthen cover materials and subsequent planting of the area" be accomplished in the closing of the site. As part of Alternative 2, a cap analysis would be performed during the remedial design/remedial action phase to determine where cover repair is required. Cover repair would then take place in areas where wastes are at or near the surface to provide a uniform cover, promote runoff and promote vegetation. Existing trees, which are rooted in the waste, would not be removed. The objective would be to achieve a permeability of the repaired cover in the range of $1\text{E}-04$ cm/sec to $1\text{E}-05$ cm/sec.

Other components of this alternative are installation of a fence around the site, institutional controls, and a program to monitor groundwater and the cover. The waste which is on Frank Brothers property would be consolidated into the original disposal area prior to cover repair, or the fence would be installed on Frank Brothers property. If the waste were removed from Frank Brothers property, sampling would be done to assure that no waste remained.

This alternative would require careful maintenance to ensure that the cover remains intact. This remedy would not significantly reduce the rate of water infiltration into the waste.

Time to Implement: several months

Estimated Cost:

Capital: \$44,000

O&M: \$132,700 per year

Present Net Worth: \$2,084,000

Alternative 3: Enhanced Capping

Under this alternative, one of three cap systems would be installed over the waste at the site. Descriptions of the three caps are provided below:

- Cap A: This cap would consist of 2 feet of compacted clay and 6 inches of topsoil, as required by NR 181.44(12), Wisconsin Administrative Code (WAC). This cap is used for Resource Conservation Recovery Act (RCRA) facilities that have interim status.
- Cap B: This cap is a solid waste cap which would meet RCRA Subtitle D closure requirements. Solid waste landfill closure requirements are more specifically defined in Wisconsin in NR 504.07 WAC. The components of an NR 504 cap, from bottom to top, are 2 feet of clay, a layer of soil 1.5-2.5 feet thick, and 6 inches of topsoil.
- Cap C: This cap is a hazardous waste cap which would meet RCRA landfill closure regulations and RCRA guidance for design of Subtitle C closure. This cap is similar to a NR 181.44 (13) cap. The cap would consist of, from bottom to top, 2 feet of compacted clay, an impermeable synthetic membrane, a 1 foot drainage layer, and 2 feet of vegetated cover.

All three caps would provide a barrier between the ground surface and the waste to prevent direct contact. Each cap also requires a hydraulic conductivity in the low permeability layer of not more than $1\text{E}-07$, which would limit water infiltration. Cap A, however, does not have a sufficient soil cover to protect the low permeability clay layer from freeze/thaw damage, and does not meet the requirements for closure of a solid waste facility in Wisconsin. Cap A will therefore not be considered further in the comparative analysis section. Cap B does meet the requirements for closure for a solid waste landfill under NR 504.07, WAC. While both solid and hazardous waste regulations are potential ARARs, it was determined that an NR 504.07 cap provides adequate protection at this site. Subtitle C landfill requirements, while relevant were determined not to be appropriate, based on site-specific circumstances. This determination was made based on the hazardous properties of the waste, its composition and matrix, and the nature of the release from the site.

First, according to available records, no RCRA listed hazardous waste was disposed of at the site. In addition, based on an analysis of the waste, the levels of hazardous constituents

in the waste are not at levels that would be expected to be characteristic for any of the newly identified organic Toxicity Characteristic constituents or for metals.

Second, there is some evidence that the dried paint sludges and fly ash have acted to attenuate organic and inorganic contaminants, to a degree which has yet to be determined which limits migration from the waste matrix.

Finally, groundwater contamination appears to be limited to a degree because of the attenuation mechanisms referred to above. For these reasons, it is determined that a Subtitle C cap is not appropriate in light of the circumstances of the site. Therefore, only Cap B will be carried forward to the comparative analysis section, and this alternative will be referred to as Alternative 3B.

Other components of this alternative are installation of a fence around the site, institutional controls, and a program to monitor groundwater and the cap. The waste which is on Frank Brothers property would be consolidated into the original disposal area prior to capping, in order to minimize the area to be capped. To implement this alternative, trees on site would have to be removed, either by pulling them up by the roots or by cutting them off at grade. If the latter is done, a gas venting system would have to be installed as part of the cap to release gas generated as the tree roots decompose.

Time to Implement: Six months

Estimated Cost: (for Cap B only) (does not include gas
 Capital: \$829,600 venting system cost)
 O&M: \$137,300 per year
 Present Net Worth: \$2,940,000

Alternative 4: Treatment by Fixation

Waste materials at the site would be uniformly fixated by controlled mixing of the waste with additives such as portland cement, lime, gypsum, fly ash or other solidification agents. The waste, surface soil and subwaste soil (approximately 91,900 cu. yds.) would be either treated in-situ or excavated and then treated. This fixation process would convert the contaminated soil and waste into a solidified mass with the consistency of cement. The contaminants would be immobilized and would be protected from interaction with infiltrating water, thereby reducing their ability to leach into the groundwater. After treatment, the solidified waste would be covered with a solid waste cap, as required in NR 504.07, WAC.

Other components of this alternative are institutional controls to limit future site use and a program to monitor

groundwater and the cap. The waste which is on Frank Brothers property would be consolidated into the original disposal area prior to in-situ treatment, and would be excavated and added to the rest of the waste for the excavation and treatment option. To implement this alternative, trees and roots on site would be removed prior to the treatment process.

This alternative will prevent direct contact with the waste, limit the mobility of the contaminants, and effectively reduce infiltration of water into the waste and the potential for water to come into contact with the contaminants.

Time to Implement: one year

Estimated Cost:	In-situ	Excavate
Capital:	\$11,563,900	\$12,223,600
O&M: (annually) 0-5 yrs -	\$137,000;	
5-10 yrs -	\$ 73,800;	
10-30 yrs -	\$ 42,100	
Present Net Worth:	\$12,731,000	\$13,391,000

8.0 COMPARATIVE ANALYSIS OF ALTERNATIVES: THE NINE CRITERIA

In accordance with the NCP, the relative performance of each alternative is evaluated using the nine criteria [Section 300.430(e)(9)(iii)] as a basis for comparison. An alternative providing the "best balance" of tradeoffs with respect to the nine criteria is determined from this evaluation.

A. Threshold Criteria

1. Overall Protection of Human Health and the Environment

This criterion addresses whether a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced or controlled through treatment, engineering controls, or institutional controls.

Alternatives 3B and 4 would provide adequate protection of human health over time. Alternative 1 would not be protective of human health and the environment in that it does nothing to reduce current and future exposure to site contaminants. Alternative 2 would reduce potential contact with contaminants in the waste, but the vegetated soil cover directly above the waste would remain less than 1 foot thick and would be subject to freezing and thawing cycles which would likely lessen the integrity of the cover. Fencing and other institutional controls, which are implemented in conjunction with the cover repair, are not as reliable as the containment and treatment options offered in Alternatives 3B and 4. Given these uncertainties,

Alternative 2 may not adequately maintain protection over time. Alternatives 3B and 4, while possibly exposing some of the waste during implementation of the remedy, would ultimately provide a 4-5 foot clay and soil layer above the waste material.

Alternatives 3B and 4 also provide protection against water infiltration, which would reduce the potential for release of contaminants to the groundwater. Alternative 4 would immobilize contaminants and eliminate the potential for a future release of contaminants to the groundwater. Present groundwater contamination should decrease over time. While all alternatives would leave wastes remaining at the site, Alternative 3B (capping) and Alternative 4 (fixation) would reduce the short and long-term risks at the site by utilizing standard engineering or treatment methods.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

This criterion evaluates whether an alternative meets applicable or relevant and appropriate requirements set forth in Federal, or more stringent State, environmental laws pertaining to the site or proposed actions.

Since Alternatives 2, 3 and 4 are similar in that they are source control remedies and address the same problem at the site, the same ARARs apply to each and will be identified and discussed below.

i. Identification of ARARs

a. Closure

There are no Federal or State closure requirements for solid waste or hazardous waste landfills which are applicable to this site, because the site was originally closed prior to the effective date of these regulations. The existing landfill cover does not meet section NR 504.07, WAC, the current State landfill closure requirements, which are similar to the proposed federal Subtitle D regulations. Chapter NR 504, WAC, is applicable to the closure of (currently) permitted solid waste landfills in the State. Since the Wheeler Pit site is sufficiently similar to a solid waste landfill, Ch. NR 504, WAC, requirements are relevant to the Wheeler Pit site. Chapter NR 504, WAC, requirements are well-suited for the Wheeler Pit site due to the reduction of infiltration by the clay layer and the long-term effectiveness offered by the frost protection layer. Thus, Ch. NR 504, WAC, the current solid waste landfill closure requirements, are also appropriate for this site. In part, section NR 504.07, WAC, requires that the

cap be composed of a 2-foot layer of compacted clay overlain by a frost-protective soil layer. The repaired cover proposed in Alternative 2 would, at most, consist of 8 inches of soil over the waste and would not comply with this ARAR. Alternative 3, Cap B and the cap placed after the treatment process in Alternative 4 would both meet the requirements of section NR 504.07, WAC.

The State of Wisconsin is authorized to implement portions of the RCRA Subtitle C program. As stated in the description of Alternative 3 in Section 7.0 above, RCRA Subtitle C is considered a relevant but not appropriate requirement at this site.

b. Groundwater Standards

1. Federal ARARs

Maximum Contaminant Levels (MCLs), and to a certain extent, Maximum Contaminant Level Goals (MCLGs), the Federal drinking water standards promulgated under the Safe Drinking Water Act (SDWA), are applicable to municipal water supplies servicing 25 or more people. At the Wheeler Pit site, MCLs and MCLGs are not applicable, but are relevant and appropriate, since the sand and gravel aquifer is a Class IIA aquifer which is presently being used in the area surrounding the site and which could potentially be used for drinking in the area of concern. MCLGs are relevant and appropriate when the standard is set at a level greater than zero (for non-carcinogens), otherwise, MCLs are relevant and appropriate at Superfund sites. The point of compliance for MCLs and MCLGs is at the boundary of the landfilled wastes or throughout the plume if wastes are removed from the site.

2. State ARARs

The State of Wisconsin has promulgated groundwater quality standards in Ch. NR 140, WAC, which the WDNR states is being consistently applied to all facilities, practices, and activities which are regulated by the WDNR and which may affect groundwater quality in the State. Chapter 160, Wis. Stats., directs the WDNR to take action to prevent the continuing release of contaminants at levels exceeding standards at the points of standards application. Chapter 160 deals with all groundwater, not just drinking water or potable aquifers. The groundwater quality standards established are Preventive Action Limits (PALs) and Enforcement Standards (ESs), which are described in detail in Section 5.0 of this document. The chemicals at the site which exceed these standards are also discussed in Section 5.0. (Wisconsin) Alternative Concentration Limits (WACLs) may also be established pursuant to Ch. NR 140, WAC. These

State standards are generally more stringent than corresponding Federal standards set forth under the Safe Drinking Water Act (SDWA) and are relevant and appropriate for the Wheeler Pit site, since they address overall groundwater quality rather than just drinking water quality.

Consistent with the exemption criteria of section NR 140.28, WAC, a WACL may be established as the clean-up standard if it is determined that it is not technically and economically feasible to achieve the PAL for a specific substance. Except where the background concentration of a compound has been determined to exceed the ES set forth in NR 140, WAC, the WACL that is established under 140.28(4)(b) may not exceed the ES for that compound. A determination of technical or economic infeasibility may be made after five years if it becomes apparent that the contaminant level has ceased to decline over time and is remaining constant at a statistically significant level above the PAL (or any WACL established due to high background concentrations) in a discrete portion of the area of attainment, as verified by multiple monitor wells.

The State, in Ch. 140, WAC, has set forth lists of potential responses to be taken when either a PAL or ES is exceeded. No active groundwater remediation is presently proposed, with the intention that source control and natural attenuation of the groundwater is a sufficient response at this time. This is based on the chemicals and levels of these chemicals found at the site during the RI. As both Alternatives 3B and 4 qualify as potential responses according to the list provided in Table 6 of Ch. 140, WAC, "Range of Responses for Exceedance of Enforcement Standards for Substances of Health or Welfare Concern", the State concurs with the remedy selected in this document.

c. Land Disposal Restrictions

Another set of RCRA regulations which may be an ARAR at the site are Land Disposal Restrictions (LDR), 40 CFR Part 268. Waste would be potentially moved at the site in Alternatives 2 and 3B during consolidation of the waste from Frank Brothers property into the original disposal area, or in Alternative 4 during excavation, treatment and redispersion. What will trigger LDRs is whether this movement constitutes placement of RCRA hazardous waste. For Alternatives 2 and 3B, the consolidation of the waste is taking place within the Area of Contamination (AOC). In this instance, the LDR requirements are not applicable or relevant and appropriate at the site. Alternative 4, under the excavation and treatment option, may trigger LDR

requirements. Whether LDRs are applicable to this alternative depends on if it is determined that RCRA characteristic hazardous wastes are present, since listed wastes were not disposed at the site. Based on this existing information, LDRs are not applicable or relevant and appropriate.

ii. Discussion

As discussed earlier, solid waste closure standards are relevant and appropriate requirements for this site. The landfill covers in Alternatives 1 and 2 do not meet current Wisconsin requirements for solid or hazardous waste landfill closures.

Although no groundwater treatment actions are being proposed, it is estimated that groundwater contaminant levels will decrease to levels that comply with Wisconsin groundwater standards by reducing the infiltration of water into the waste. Under Alternative 1, water would continue to infiltrate at its present rate, with only a slight decrease under Alternative 2. Alternative 3B would significantly reduce infiltration. Alternative 4 would be of similar effectiveness to Alternative 3B while also greatly reducing the potential for any infiltrating water to come in contact with contaminants.

The cap in Alternatives 3B and 4 will also help minimize any future risks from the site. The cap, if maintained, would prevent future direct contact with contaminants and reduce infiltration which will minimize, to the extent practicable, any future releases into the groundwater from the site. It is expected that this will result in future compliance with Wisconsin statutes which require that future releases of contaminants should not exceed state groundwater quality standards.

B. Primary Balancing Criteria

3. Long-Term Effectiveness/Permanence

This criterion delineates the residual risk and evaluates the ability of an alternative to maintain reliable protection of human health and the environment over time, once cleanup objectives have been met.

Under Alternative 1 (no action), protection from direct exposure would not be achieved and water infiltration would not be reduced. Alternative 1 would not maintain protection over time due to freezing and thawing cycles and erosion which would likely damage the present cover. Alternative 2 would be more effective in limiting direct contact than

Alternative 1, but the cover would still be exposed to the same weathering conditions as Alternative 1 and would need to be continually repaired to maintain effectiveness. Alternatives 3B and 4 will provide adequate protection assuming the cap is maintained. This is because Alternatives 3B and 4 remove the direct contact threat and reduce water infiltration into the disposal area. Alternative 3B and 4 would also be affected by weathering conditions, but the low permeability clay layer in these alternatives would be protected by 2 to 3 feet of soil, which will minimize the impact of the freeze and thaw cycles. The clay cap in Alternatives 3B and 4 may also be affected by desiccation and cracking and by subsidence of the waste materials. Under these alternatives, the cap would be monitored for continued effectiveness and would be repaired as necessary.

4. Reduction of Toxicity, Mobility or Volume Through Treatment

This criteria evaluates the anticipated performance of the treatment technologies a remedy may employ.

Alternatives 1, 2, and 3B would not reduce the toxicity, mobility, or volume of contaminants through treatment. These alternatives do not meet the statutory preference for treatment. Alternative 4 would reduce the mobility of contaminants through fixation, but the toxicity would not be reduced, and the volume of waste materials would increase.

5. Short-term Effectiveness

Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period.

Alternatives 2, 3B and 4 would involve moving a small amount of waste at the site. Minimal risks to nearby residents posed by dust from digging during the implementation of Alternatives 2, 3B and 4 would be controlled through standard dust control measures and health risks to workers would be minimized with protective equipment. There will be a fence around the site during construction activities which will protect nearby residents. This fence will remain after construction activities are completed. In implementing Alternatives 3B and 4, the trees on site would be removed in a way to minimize disturbance of the waste materials. While it is recognized that placing a cap on a site may initially disturb the waste, all standard methods for minimizing such an impact will be employed. If necessary, special equipment, engineering controls and

design techniques can be utilized. Alternative 4 would require 1 year to complete and Alternatives 2 and 3B could be completed in approximately 6 months.

It is unknown how long before groundwater standards will be met in the aquifer. Groundwater quality will be evaluated during the monitoring program to determine if it is improving or remaining the same. The monitoring program is expected to continue for at least 30 years.

6. Implementability

This criterion considers the technical and administrative feasibility of implementing an alternative, including the availability of material and services needed to implement a particular option.

Alternatives 2, 3B and 4 are technically feasible, although Alternative 4 might be slightly more difficult to implement because the waste will be handled during the treatment process. According to the RI, the waste contains refuse such as steel-reinforced concrete and aluminum window frames which probably would have to be separated out prior to fixation. For Alternatives 2, 3B and 4, there might be some administrative difficulties in receiving permission to access adjoining property, since some waste currently exists on neighboring property. For Alternative 4, the excavation and fixation option may be subject to Land Disposal Restrictions.

All pathways of risk will receive adequate monitoring through the groundwater and cap monitoring programs. If monitoring is not sufficient to detect failure of the remedy and increased groundwater contamination, nearby downgradient homes with private wells would potentially be affected. To address this possibility, private wells downgradient will be monitored to detect changes in groundwater quality. If additional remedial action becomes necessary at the site, this will be fairly easy to undertake under any of the alternatives presented here.

7. Cost

Costs include the estimated capital and operation and maintenance (O & M) costs, as well as present-worth costs. These costs for each alternative are presented in Table 3.

C. Modifying Criteria

8. State Acceptance

U.S. EPA and WDNR agree on the selected alternative.

9. Community Acceptance

Community acceptance is assessed in the attached Responsiveness Summary. The Responsiveness Summary provides a thorough review of the public comments received on the Proposed Plan, and the Agency's responses to those comments.

9.0 THE SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, as amended by SARA, and the NCP, the detailed analysis of alternatives and public comments, U.S. EPA and WDNR have selected Alternative 3B -- the NR 504.07, WAC, multi-layer cap; consolidation of waste; institutional controls and groundwater monitoring -- as the cost-effective protective remedial action for the Wheeler Pit Site.

Under Alternative 3B, the cap will be placed on the site in compliance with the current requirements of Section NR 504.07, WAC for closure of solid waste facilities. The cap will consist of a grading layer, a minimum 2-foot clay layer (compacted to a permeability of $1E-07$ cm/s or less), a frost protective soil layer at least 1.5 feet thick, and a minimum 6-inch topsoil layer. The thickness of the soil layer will depend on the frost penetration depth at the site. A drainage layer will also be included as part of the cap on top of the clay layer to enhance drainage off the clay layer. The waste and soil (approximately 400 cu yd) which is presently on the property north of the site will be consolidated under the cap. Testing will be conducted to assure all waste is contained under the cap and to verify that all waste has been removed from Frank Brothers' property.

Institutional controls will be relied upon to enhance the effectiveness of the remedy, including deed restrictions and landfill development restrictions (NR 506). A cyclone fence will also be installed around the site. State restrictions on the installation of drinking water supply wells within 1200 feet of a landfill (restrictions found in Ch. 112, WAC) cannot be relied upon to limit off-site groundwater use over the long-term, since variances provided for in section NR 112.04, WAC, may be granted in the future. Additional groundwater monitor wells will be installed to more fully characterize the groundwater system. New and existing wells will be monitored for at least 30 years. Private wells located down-gradient of the site will also be monitored to assess potential impacts to human health and the environment.

The risk due to direct contact with the waste will be reduced immediately after cap construction is completed. It is projected that the contamination presently in the groundwater will begin to decrease over time once the cap is in place. However, groundwater quality will be evaluated during the monitoring program to determine if it is improving or remaining the same. The goal of the source control action will be to attain the groundwater clean-up standards at the waste boundary of Wheeler Pit, which is the suggested NCP point of compliance for groundwater. The clean-up goals which have been established are PALs.

The initial review of the groundwater monitoring data will

TABLE 4

COST SUMMARY
ALTERNATIVE 3 - ENHANCED CAPPING
WHEELER PIT SITE

	CAP A	CAP B	CAP C
<u>CAPITAL COSTS</u>			
INSTITUTIONAL CONTROLS	\$10,000	\$10,000	\$10,000
- CHAIN LINK FENCING W/GATES	19,100	19,100	19,100
CAPPING			
CAP A - NR 181.44(12)	\$331,200	--	--
CAP B - NR 504.07	--	★ 543,100	--
CAP C - NR 181.44(13)	--	--	816,700
CAPITAL COST SUBTOTAL	\$360,300	\$572,200	\$845,800
ADMINISTRATION, LICENSING (5%)	18,000	28,600	\$ 42,300
ENGINEERING (20%)	72,100	114,400	\$169,200
CONTINGENCY (20%)	72,100	114,400	\$169,200
TOTAL CAPITAL COSTS	\$522,500	\$829,600	\$1,226,500
<u>OPERATION AND MAINTENANCE COSTS (ANNUAL)</u>			
CAP MAINTENANCE	\$ 4,700	\$ 4,700	\$ 4,700
MONITORING - CAP	4,300	4,300	4,300
MONITORING - GROUNDWATER	110,400	110,400	110,400
ANNUAL OPERATION AND MAINTENANCE COST SUBTOTAL	\$119,400	\$119,400	\$119,400
CONTINGENCY (15%)	\$ 17,900	\$ 17,900	\$ 17,900
ANNUAL OPERATION AND MAINTENANCE COST TOTAL	\$137,300	\$137,300	\$137,300
<u>30-YEAR PRESENT NET WORTH</u>			
(5% Discount Rate)	\$2,633,000	\$2,940,000	\$3,337,000

★. Cost does not include
drainage layer

be conducted within 5 years after the commencement of remedial action. Thereafter, the monitoring data will be reviewed at no longer than 5-year intervals. In the event that conditions at the site degrade, or the remedy does not provide for timely improvement of groundwater, the EPA and WDNR will consider additional actions, as appropriate, to achieve protection at the site.

Table 4 presents the details of the cost.

10.0 STATUTORY DETERMINATIONS

The selected remedy must satisfy the requirements of Section 121 (a-e) of CERCLA, as amended by SARA, to:

- a. Protect human health and the environment;
- b. Comply with ARARs;
- c. Be cost-effective;
- d. Utilize permanent solutions and alternative treatment technologies to the maximum extent practicable; and,
- e. Satisfy the preference for treatment as a principal element or provide an explanation as to why this preference is not satisfied.

The implementation of Alternative 3B at the Wheeler Pit Site satisfies the requirements of CERCLA, as amended by SARA, as detailed below:

a. Protection of Human Health and the Environment

This selected remedy provides adequate protection of human health and the environment.

Implementation of the selected alternative will reduce and control potential risks to human health and the environment posed by exposure to site contaminants and will reduce the site as a source of groundwater contamination. Since groundwater contaminant loading will be reduced due to decreased infiltration of water through the cap, groundwater quality is expected to improve over time.

No unacceptable short-term risks will be caused by the implementation of the remedy. The community and site workers may be exposed to dust and noise nuisances during construction of the cap. Standard safety programs, such as fencing, use of protective equipment, monitoring and dust control measures, should mitigate any short-term risks. Standard methods for minimum disturbance of the waste and for prevention of infiltration, such as placing a tarp over exposed areas, will also be employed.

b. Compliance with ARARs

The selected remedy will comply with all Federal and/or State, where more stringent, ARARs. The following ARARs will be attained.

1. Chemical-specific ARARs

Chemical-specific ARARs regulate the release to the environment of specific substances having certain chemical characteristics.

Applicable or Relevant and Appropriate Requirements

- Ch. NR 140, WAC, and Ch. 160, Wisconsin Statutes. PALs will be established as the remediation goals.

- SDWA MCLs and MCLGs

"To Be Considered" Criteria

Occasionally, advisories that do not meet the definition of ARAR may be necessary to determine what is protective at a site. Although the new chemical specific clean-up standards for 1,4-dichlorobenzene, which were mentioned in Section 5.0 of this document, have not been promulgated yet, it is a "To Be Considered" criteria which is presently exceeded at the site.

2. Location-specific ARARs

Location-specific ARARs are those requirements that relate to the geographical position of a site.

Applicable Requirements

- NR 112, WAC. Requires that no drinking water wells be located within 1200 feet of a landfill, unless a variance is obtained from the WDNR.

- NR 506 and NR 540, WAC. Regulates the development of landfills.

3. Action-specific ARARs

Action-specific ARARs are requirements that define acceptable treatment and disposal procedures for hazardous substances.

Applicable Requirements

There were no applicable action-specific requirements.

Relevant and Appropriate Requirements

- NR 504.07, WAC. Regulates design of solid waste landfill cap.

- Additional State action-specific ARARs can be found in the FS Report.

c. Cost-effectiveness

A cost-effective remedy is one for which the cost is proportional to the remedy's overall effectiveness. Table 3 lists the costs associated with the implementation of the remedies.

Alternative 3B affords a high degree of effectiveness by providing protection from exposure to the contaminants in the waste and minimizing the infiltration of water into the waste. Treatment of the source (Alternative 4) is greater than 10 times the cost of a cap and does not provide a significant benefit proportional to its cost. Although Alternative 2 is less expensive than Alternative 3B, it is not protective. Alternative 3A, although less expensive than Alternative 3B, does not provide for frost protection. Alternative 3C, which includes a flexible membrane liner, is not believed to be appropriate for this site. Therefore Alternative 3B is a cost-effective alternative which provides overall effectiveness proportional to its cost.

d. Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable

U.S. EPA and the State of Wisconsin believe the selected remedy represents the maximum extent to which permanent solutions and alternative treatment technologies can be utilized in a cost-effective manner for the Wheeler Pit site. Of the alternatives that are protective of human health and the environment and comply with ARARs, U.S. EPA and the State have determined that the selected remedy provides the best balance of tradeoffs in terms of long-term effectiveness and permanence, reduction of toxicity, mobility or volume through treatment, short-term effectiveness, implementability, cost and State and community acceptance. The selected remedy can be

implemented and completed more quickly with less difficulty

and at less cost than the waste treatment alternative. The cost of the fixation option was an order of magnitude greater than the cap, with not much increased benefit.

The selected remedy represents the maximum extent to which permanent solutions and treatment can be practicably utilized for this action, since the waste poses a low-level, long-term threat and no "hot spots" were identified. The level of contamination remaining in the waste on site can be reliably controlled over time through engineering and institutional controls, and treatment is therefore not practicable. A cap provides adequate protection from exposure to waste and acts as a barrier to precipitation infiltration, assuming the cap is effectively maintained.

e. Preference for Treatment as a Principal Element

The Wheeler Pit site contains waste mixed with fly ash and other debris. The landfill does not appear to contain "hot spots", and no principal threat which warrants treatment at the site has been identified. Therefore, satisfaction of the preference for treatment as a principal element of the remedy is not applicable. In addition, based on the comparative analysis of alternatives, it has been determined that treatment does not provide a significant benefit proportional to its cost.

11.0 DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the Wheeler Pit site was released for public comment in July 1990. The Proposed Plan identified Alternative 3B, a solid waste landfill clay cap with groundwater monitoring, as the recommended alternative. EPA reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary.

RESPONSIVENESS SUMMARY

This Responsiveness Summary has been prepared to meet the requirements of Sections 113(k)(2)(B)(iv) and 117(b) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA), which requires the United States Environmental Protection Agency (U.S. EPA) to respond "...to each of the significant comments, criticisms, and new data submitted in written or oral presentations" on a proposed plan for remedial action. The Responsiveness Summary addresses concerns expressed by the public and potentially responsible parties (PRPs) in the written and oral comments received by the U.S. EPA and the State regarding the proposed remedy for the Wheeler Pit site.

A. OVERVIEW

I. BACKGROUND/PROPOSED PLAN

The Wheeler Pit Superfund site is a 3.8 acre property located in rural La Prairie Township, Wisconsin, approximately 1.5 miles east of the City of Janesville. This site is located in the southeast portion of the former 34-acre Wheeler Sand and Gravel Pit.

The Remedial Investigation (RI) identified several concerns at the site: 60,600 cubic yards of waste in the pit and groundwater contaminated with constituents in excess of state groundwater standards. The Feasibility Study evaluated four cleanup alternatives to address these concerns. The Proposed Plan for remedial action included:

- consolidation of off-site waste into the original disposal area;
- installation of a cap to meet current State landfill closure requirements;
- institutional controls; and
- groundwater monitoring.

II. PUBLIC COMMENT PERIOD

A public comment period was held from July 12, 1990 to August 24, 1990 to allow interested parties to comment

on the Proposed Plan in accordance with Section 117 of CERCLA. On August 8, 1990, a public meeting was held in La Prairie Township, Wisconsin, at which the U.S. EPA and Wisconsin Department of Natural Resources (WDNR) presented the Proposed Plan, answered questions, and accepted comments from the public. During the public comment period, U.S. EPA received approximately 29 written and several verbal comments concerning the proposed plan.

B. COMMUNITY INVOLVEMENT

Public interest regarding the site has been low. The community generally seems to favor taking only limited action at the site and were concerned with the types and extent of institutional controls which would be placed on land near the site.

The above concerns will be addressed in the following section.

C. SUMMARY OF SIGNIFICANT COMMUNITY COMMENTS

Comment 1

One commentor requested that U.S. EPA sample the groundwater across Highway O. He further stated that the site should be "covered on a slant to protect the groundwater."

Response

As part of the Remedial Investigation, one well south of Highway O was monitored. Based on the limited groundwater contamination identified at the site, it seems unlikely that significant contamination would be discovered off-site. However, U.S. EPA agrees that additional samples should be taken in this location. Therefore, as part of the groundwater monitoring program described in the preferred alternative and adopted as the selected remedy in the ROD, we estimate that three wells south of Highway O will be sampled. These wells will include well 'B', which was monitored during the RI, and at least two private wells. We anticipate monitoring the groundwater for approximately thirty years.

The commentor also stated that the site should be "covered on a slant to protect the groundwater", so that groundwater runs off the site instead of sinking into the soil at the site. The cap described in the preferred alternative will do just that. The cap will consist of a grading layer, a

minimum 2-foot clay layer, a frost protective soil layer at least 1.5 feet thick, and a minimum 6-inch topsoil layer. A drainage layer may also be included as part of the cap on top of the clay layer. The specific plan for grading the surface of the site will be developed as part of the remedial design.

Comment 2

Another commentor suggested adding a couple of feet of clay and grading the surface so that the rain would drain to the southwest.

Response

The cap described in the Proposed Plan as the preferred alternative, and now chosen as the Selected Remedy, will be designed so that water cannot enter the soil and mix with the waste at the site. The cap will be basically an engineered version of the concept described by the commentor. State regulations require that the cap meet current solid waste landfill closure requirements. These regulations call for the landfill cover to be composed of a grading layer, a minimum 2-foot clay layer with a permeability of $1\text{E-}07$ cm/sec, a frost-protective soil layer, and a minimum 6-inch topsoil layer. Although relying on a cap made solely out of clay may seem like a simpler and cheaper approach, the requirements outlined above better protect human health and the environment by enhancing the long-term effectiveness of the cap.

Comment 3

Another commentor requested that the existing residential wells be monitored. She also requested information on how deed restrictions imposed at the site could impact adjoining properties.

Response

As part of the monitoring program described in the selected remedy, nearby residential wells will be monitored.

Deed restrictions may be used as part of the institutional controls that will be used for the remedial action. Possible additional restrictions or limitations could be instituted by utilizing zoning restrictions, or by purchasing the land outright. It is likely that any restrictions will be related to the site itself, and if they are used they would have a minimal impact on adjoining landowners. If restrictions need to be placed on adjoining property owner's land, these property owners will be

notified prior to any action.

Comment 4

Another commentor felt that the preferred alternative was too expensive. She also stated that the agency was moving too fast, because a remedy had been selected before a problem had even been found.

Response

The Selected Remedy, Alternative 3B, is cost-effective. It affords a high degree of effectiveness by providing protection from exposure to the contaminants in the waste and minimizing the infiltration of water into the waste. A detailed discussion of the costs of the various alternatives may be found in the Record of Decision.

U.S. EPA does not believe that it is too early to select a remedy and take action at the site. In fact, there are several reasons why action must be taken at the site. The Risk Assessment has identified sufficient hazards to necessitate an action to protect human health and the environment. In addition, the U.S. EPA and the State of Wisconsin have identified Ch. NR 504 WAC as a relevant requirement for the site. Also, on a practical level, it makes sense to take action now. By constructing a sound cap over the site, any future risks to groundwater will be minimized. It will also be less expensive to respond now, rather than in the future. Contamination could spread making cleanup more costly. Also, cleanup costs in general will likely increase if remediation is required in the future.

Comment 5

Another resident inquired as to whether GMC would be liable for a new well if an existing well became contaminated due to the waste disposed of at the Wheeler Pit site, and who would be liable if a lawsuit was filed in response to use of the existing well.

Response

The groundwater monitoring program provided for under the remedial action is intended to address groundwater contamination resulting from the site. If it is determined at a future date, for example during the five year review provided for under CERCLA, that active groundwater remediation is required, those parties who can be linked to the contamination may be required to carry out those activities. Concerning a potential lawsuit, the lawsuit

would be between private parties and U.S. EPA would not be involved. To reiterate, U.S. EPA and WDNR believe that the groundwater monitoring program to be carried out under the remedial action, in conjunction with the other aspects of the action, is protective of human health and the environment.

D. SUMMARY OF SIGNIFICANT PRP COMMENTS

The PRPs disagree with the Proposed Plan and its selection of Alternative 3B. The PRPs believe that conditions at the site, and the absence of any significant threat to human health or the environment, warrant the selection of Alternative 1, No Action, or at most Alternative 2, Cover Repair, for this site. They feel U.S. EPA's proposed remedy poses a greater potential threat to human health and the environment than current conditions, because it may disrupt stable waste and cause the release of contaminants into the environment. The comments from the PRPs are organized below based upon issue.

I. SITE HISTORY AND CURRENT CONDITIONS

a. Waste Fixation

Comment 1

Disposal practices at the Site resulted in the mixing of paint booth sludges, fly ash and clarifier sludges from General Motor's automobile assembly plant. Since the fly ash, acting as a pozzolanic material, was mixed with clarifier sludges containing lime all in the presence of water, the three necessary ingredients for pozzolanic stabilization / solidification were present to immobilize chemicals.

Response

U.S. EPA acknowledges that these materials were present during disposal at the Wheeler Pit site. However, disposal at the site was not an engineered solidification / stabilization process. The percentages of each material disposed there is not known, so the materials may not have been in the proper proportions to result in an effective treatment process. In addition, the method of disposal was a layering process, not a process in which the materials were mechanically mixed, which is required as part of a properly implemented solidification / stabilization technique. Also present in the waste are pieces of concrete, bricks, aluminum frames, and other debris

which lessen the effectiveness and uniformity of any supposed treatment process. As a result of these unknowns and deviances, U.S. EPA does not think that it can be conclusively stated that all the waste at the site has been stabilized and that the disposal methods used at the site have achieved the same degree of effectiveness that an engineered solidification / stabilization treatment process can. Therefore, the chemicals may not be entirely immobile and may still come in contact with infiltrating water and be carried into the groundwater.

Comment 2

In addition to the chemical fixation of waste contaminants, there is evidence of encapsulation of volatile organic compounds (VOCs). The lack of significant VOC detects in the subwaste soils or groundwater attest to the capacity of the paint "clods" to prevent the migration of VOCs from the waste.

Response

The sampling method utilized during the RI does not conclusively prove that all the volatiles in the waste are contained in the "clods". The RI did not investigate the ability of the "clods" to contain the VOCs, nor did it subject any of the waste samples to the Toxicity Characteristics Leaching Potential (TCLP) analytical procedure, which is designed to ascertain this very issue. Thus, contrary to the PRPs' assertion, there is little hard evidence of encapsulation of the VOCs. The PRPs have themselves identified in the FS Report, under the evaluation of Alternative 4, Treatment by Fixation, that stabilization / solidification has not been demonstrated to adequately address VOCs. Some VOCs may be available for contact with infiltrating water.

Comment 3

The effectiveness of the fixed waste to reduce contaminant migration, meets or exceeds the 90% to 99% reduction guidelines stated in the NCP for treatment that would be required for a CERCLA remedy.

Response

As stated in the response to comment 2, there is little evidence that the waste is chemically fixed. In fact there are contaminants from the waste which indicate that the mobility of the contaminants remains a

concern. There is no evidence that the waste has been treated to reduce the mobility of contaminants by 90-99 percent.

The NCP was clarifying the agency's goal to consider a wide variety of treatment technologies to address hazardous substances at Superfund sites, and thus specified a treatment range that the technology should be designed to achieve.

b. Groundwater

Comment 4

No evidence of significant migration could be found in subwaste soils and groundwater. Chemicals detected in the waste were either not detected in subwaste soils or were detected in very low concentrations. The most plausible explanation for the lack of contaminant migration is that the waste has stabilized and does not interact with the percolating water.

Response

As stated in the responses to comments 1, 2 and 3 in Section I(a), U.S. EPA and WDNR do not think that it can be conclusively stated that all the waste at the site has been stabilized and that the disposal methods used at the site have achieved the same degree of effectiveness that an engineered solidification / stabilization treatment process can. In fact, the PRPs acknowledge that sufficient stabilization / solidification has not been demonstrated to adequately address VOCs (see comment 2, Section I(a)). Therefore, the chemicals may not be entirely immobile and may still come in contact with infiltrating water and be carried into the groundwater. See also responses in the following Sections I(c) and IV(a).

c. Reducing Conditions

Comment 5

The effect of "reducing conditions" on groundwater chemistry immediately downgradient of the Site is to enhance the solubility of certain multivalent inorganic parameters (such as iron, arsenic and to some extent manganese contained in the natural soils). The result in groundwater samples collected from monitoring well MW3A is concentrations of iron and arsenic in excess of

Chapter NR 140, Wisconsin Administrative Code,
Groundwater Standards.

1. The extent of the downgradient reducing conditions appears limited.
2. As background groundwater quality conditions return downgradient of the Site, the solubilized metals are reabsorbed and precipitate out of solution.
3. The degree of reducing conditions will diminish with time as organic matter in the fill decomposes.
4. No current risk to human health or the environment exists as a result of the reducing conditions.

Response

U.S. EPA acknowledges that reducing conditions may be in part responsible for the present groundwater contamination. However, concentrations of arsenic in groundwater at the site and immediately downgradient of the site indicate that exceedances of the NR 140, WAC, Preventative Action Limit (PAL) exist, and that this level presents a risk of $1.9E-03$ to a consumer of that water. While groundwater at the site is not presently used for potable purposes, the potential for such future use exists. Such use would result in an unacceptable health risk to the user. In addition, further migration could impact groundwater wells downgradient.

Comment 6

The current impact of chlorinated benzenes is low (concentrations are less than $1/4$ of the NR 140 PAL standards and there is no current risk to human health). The chlorinated benzenes were not detected in fill materials and may well be related to off-site activities.

Response

U.S. EPA acknowledges that the chlorinated benzene compounds were not detected in the fill material during test-pit activities, but notes that another explanation offered by the RI Report was that chlorinated benzene compounds in the waste were very localized. The fact the compound was not found during

the limited test pit activities does not prove that the waste is from off-site, and U.S. EPA considers the chlorinated benzene contamination as a release from the site.

The potential future risk, under the exposure conditions identified in the risk assessment section of the RI Report, is greater than the point of departure, $1.0E-06$. Furthermore, the actual extent of 1,4-dichlorobenzene contamination is uncertain, since the furthest downgradient well still showed elevated levels, with a concentration of 25 ug/L and a risk of $2.0E-05$. This risk, calculated solely on the basis of 1,4-dichlorobenzene, is greater than the point of departure.

In addition, PALs and Enforcement Standards (ESs) for 1,4-dichlorobenzene will be lowered as of October 1, 1990, at which time this chemical at the site will exceed its PAL. These new levels are "To Be Considered" criteria at the site. U.S. EPA believes that their use is consistent with the statutory requirement to protect human health and the environment.

d. Human Health

Comment 7

Exposure to contaminants in groundwater does not affect current health risks because the area of impacted groundwater is not used for potable purposes. The future risk was above 1 in 1 million ($1.0E-06$), but can be further reduced by access and deed restrictions.

Response

U.S. EPA acknowledges that contaminated groundwater at the site is not used for potable purposes, and that future risk due to groundwater usage can be partially addressed by access and deed restrictions. In fact, the Selected Remedy, Alternative 3B, incorporates access and deed restrictions along with groundwater monitoring. Alternative 3B also incorporates a cap as a means of reducing infiltration and percolation, and thus will help further minimize the potential future releases of site waste constituents to groundwater. Alternative 2 does not use an adequate cover or cap, and thus does not adequately address infiltration and protection of groundwater.

It is U.S. EPA's expectation, as promulgated in the NCP, that "contaminated groundwaters will be returned to their beneficial uses wherever practicable within a timeframe that is reasonable given the particular circumstances". As explained earlier, U.S. EPA believes that by capping the site, and reducing infiltration into the waste, groundwater quality will improve. If this is not the case, U.S. EPA and WDNR may require additional remedial action. U.S. EPA believes that institutional controls can be used, as appropriate to prevent exposures to releases of hazardous substances during remedy implementation and to supplement engineering controls. These institutional controls should not substitute for active response measures as the sole remedy, unless these measures are impracticable.

U.S. EPA also notes that groundwater is used by downgradient residences for potable purposes. While the nearby residential wells were not sampled and analyzed during the RI, testing by the State of Wisconsin in 1984, 1985 and 1988 indicated that the nearby residential wells tested did not show detectable levels of VOCs. This testing, however, did not analyze for other site contaminants. The Selected Remedy includes testing of nearby residential wells as part of its groundwater monitoring program.

II. REMEDIAL ACTION ALTERNATIVES

a. Alternative 2

Comment 1

Waste stability and groundwater quality will be monitored to measure groundwater quality improvement over time as reducing conditions diminish.

Response

U.S. EPA acknowledges that groundwater quality monitoring will be key to ascertaining groundwater quality improvement over time, and as such will be the indirect measurement of waste stability and effectiveness of the implemented remedy for both Alternatives 2 and 3B. However, Alternative 2 does not adequately provide for overall protection of human health and the environment. Alternative 2 does not sufficiently provide for limitation of infiltration and reduction of potential leaching of site waste constituents to groundwater. Alternative 3B, through

use of an engineered NR 504 cap, does provide for limitation of infiltration and reduction of potential leaching of site waste constituents to groundwater.

Comment 2

Physical contact with the waste will be prevented through cover repair, cover monitoring and maintenance, perimeter fencing and institutional controls.

Response

U.S. EPA acknowledges that an important aspect of the remedy is the prevention of physical contact with the waste through capping, monitoring and maintenance of the cap, perimeter fencing, and institutional controls. While the "cover" to be implemented under Alternative 2, Cover Repair and Access Restrictions, provides limited protection to restrict physical contact with the waste through the combination of controls as stated above, it does not provide for adequate protection from freeze / thaw cycles and erosion. Hence, Alternative 2 may subject the waste to disturbance through erosion and subsequent releases to the environment. Furthermore, Alternative 2 does not adequately provide protection of groundwater. Alternative 2 does not sufficiently provide for limitation of infiltration and reduction of potential leaching of site waste constituents to groundwater. As a result, Alternative 2 does not adequately provide for overall protection of human health and the environment. Alternative 3B, through use of an engineered NR 504 cap, does provide for limitation of infiltration and reduction of potential leaching of site waste constituents to groundwater, as well as affording protection from freezes and thaws.

Comment 3

Use of impacted groundwater would be prevented both through the groundwater monitoring activities and restrictions (institutional controls) over groundwater use.

Response

U.S. EPA acknowledges that groundwater monitoring activities and restrictions (institutional controls) over groundwater use are key components of a remedy which provides for overall protection of human health and the environment. These elements are included in the Selected Remedy, Alternative 3B, Enhanced Capping.

See the response to comment 7 in Section I(d).

Comment 4

Implementation of Alternative 2 minimizes disturbance of the stabilized wastes and therefore eliminates the potential for adverse effects due to destabilization and subsequent releases of fixed contaminants.

Response

While Alternative 2, Cover Repair and Access Restrictions, does minimize disturbance of wastes, it does not eliminate the potential for adverse effects due to destabilization and subsequent releases of contaminants. Alternative 2 does not provide for adequate protection from freeze / thaw cycles, and hence may subject the waste to disturbance through erosion and subsequent releases to the environment. U.S. EPA disagrees with the PRPs contention that the wastes are "stabilized" or "fixed". See the response to Comment 1 under Section I(a) above for further discussion of the stabilized / fixed issue.

b. Alternative 3

Comment 5

Evidence collected during the RI indicated the paint sludges had dried into "clods" encapsulating potentially mobile VOCs. The release of VOCs to air upon disturbance of the waste and subsequent breaking of clods was documented during test pit activities as elevated HNu readings.

Response

While test pitting activities during the RI encountered some "clods", no testing has been done of these clods to evaluate the assertion that they are "encapsulating" potentially mobile VOCs nor is it known how extensive these "clods" are. While U.S. EPA acknowledges that breaking of clods during test pit activities resulted in elevated HNu readings at the exposed cut face of the excavation, U.S. EPA notes that no elevated HNu readings were detected in the breathing zone (i.e., at face level) in the same location. This lack of detection in the breathing zone is an indication of minimal air impacts. However, the potential impacts of excavation and earthmoving activities associated with Alternative 3B will need to be evaluated during the

design phase. The design phase will also ascertain the need for an air monitoring program in the work zone and at the site perimeter during implementation of Alternative 3B.

Comment 6

The result of Warzyn's model is that a significant release of toluene, ethylbenzene, xylenes and other waste constituents could occur due to the disturbance of only the upper 2 feet of waste materials. The contaminant concentrations potentially occurring in groundwater from such a release would result in substantial impacts to groundwater quality. The benefit of reducing infiltration through the implementation of Alternative 3 would be minimal at best and, in light of the demonstrated potential for a release due to waste disturbance, would be inappropriate and in fact more dangerous.

Response

The model referred to here was prepared by Warzyn on behalf of the PRPs. That model theorizes that a release to groundwater of toluene, ethylbenzene and xylenes could occur due to disturbance of the upper two feet of waste materials, but only with the exposure of these waste materials to a one-inch rainfall event. Simple engineering controls, however, exist to address this very problem, and can be very easily implemented with little cost impact. An example of one such control is placement of a tarp over the exposed waste material, thereby eliminating the possibility of infiltrating rainfall to leach the contaminants out of the exposed waste materials. Without this rainfall exposure, the modeled release will not occur. The Selected Remedy, Alternative 3B, can be adequately engineered and implemented to address this risk of release. However, if a release were to occur during or after the implementation of the selected remedy, U.S. EPA and WDNR will reevaluate whether further remedial action is appropriate. U.S. EPA is concerned that if no action is taken at the site, a release such as that described above would be inevitable. U.S. EPA and WDNR therefore believe remedial action is necessary at Wheeler Pit.

III. Protection of Human Health and the Environment

Comment 1

Although Alternative 3 would be more effective in reducing infiltration than the cover repair option, Alternative 2 provides adequate protection from risks. Monitoring would enable detection of a future change in groundwater quality. The length of time the wastes have been in place (approximately 30 yrs) and the minimal groundwater impact to date supports the assertion that contaminants have been stabilized, even given the permeability of the existing cover.

Response

While U.S. EPA acknowledges that groundwater monitoring, to be implemented under both Alternatives 2 and 3B, will enable detection of future changes in groundwater quality, U.S. EPA disagrees with the PRPs' assertions that contaminants have been adequately stabilized, and that Alternative 2 provides adequate protection from risks. See the responses to Comments 1 and 2 under Section I(a) above for a discussion of the "stabilization" issue. See the response to comment 3 under Section III below for a discussion of the "protectiveness" issue.

Comment 2

The lack of evidence supporting the agency position that groundwater quality will necessarily improve in the short-term with the implementation of Alternative 3, as well as the possibility of detrimental impacts through alternative implementation, do not support selection of Alternative 3 over Alternative 2 as the Site remedy.

Response

The NCP established nine evaluation criteria for selection of remedies at Superfund sites. The first two of these criteria are "threshold" criteria--i.e., if the alternative considered can not meet both of these criteria, the alternative can not be further considered. These two threshold criteria are: 1) overall protection of human health and the environment, and 2) compliance with state and federal ARARs. Alternative 2 does not comply with federal and State applicable or relevant and appropriate requirements (ARARs). Because Alternative 2 does not meet this threshold criteria, it cannot be considered further for implementation as the final remedy. The issue of "detrimental impacts" due to implementation of Alternative 3B is addressed under the response to Comment 6 under Section II(b) above. Again, the PRPs are stating that they believe a release is inevitable if the waste is disturbed. This concerns us

since we are required to protect human health and the environment over the long-term. U.S. EPA does not believe Alternative 2 will provide that protection since institutional controls may not be effective, and the cover repair is not protective of groundwater.

Comment 3

Alternatives 2 and 3 are equally protective because they both rely on institutional controls (e.g., deed restrictions) to restrict the types of acceptable future site development.

Response

U.S. EPA acknowledges that Alternatives 2 and 3B both rely on identical institutional controls to restrict the types of acceptable future site development. Alternative 2, however, does not provide the same level of effectiveness as Alternative 3B in relation to prevention of direct contact risk, nor in terms of reduction of infiltration and limitation of potential groundwater contamination. U.S. EPA has determined that Alternative 2 is not protective.

IV. ARARS

a. NR 140

Comment 1

The only ES exceedances at Well B were TDS (total dissolved solids) and manganese. ES exceedances are not attributable to the Site, directly nor indirectly. None of these exceedances pose a significant threat to human health nor the environment. Under these circumstances, therefore, the "No Action" or groundwater monitoring alternatives may be appropriate and could satisfy the requirements of NR 140.

Response

The State of Wisconsin established Chapter 160, Wisconsin Statutes, and Chapter NR 140, Wisconsin Administrative Code, to protect not only drinking water quality in the State of Wisconsin, but more importantly to protect the State's overall groundwater quality. In doing so, it developed a set of actions that the Wisconsin Department of Natural Resources could take to mitigate present and future releases, regardless of whether the contamination is from public health

contaminants or public welfare contaminants (such as TDS, iron, nitrate, and manganese). Also see the responses to comments 1 and 2 under Section IV(a).

The agencies and PRPs continue to disagree on whether action, pursuant to Chapter NR 140, WAC is required at the Wheeler Pit site. Regardless of whether or not action is specifically mandated at this site by Chapter NR 140 (which the State believes it is), the WNDNR would like to point out that nothing in Chapter NR 140, WAC precludes the State from taking action under other State laws. In particular, NR 140.24(7) states "the department may take any actions within the context of regulatory programs established in statutes or rules outside of this chapter, if those actions are necessary to protect public health and welfare or prevent a significant damaging effect on groundwater or surface water quality for present or future consumptive or nonconsumptive uses, whether or not an enforcement standard and preventative action limit for a substance have been adopted under this chapter."

The U.S. EPA and State disagree with the statement that the exceedances are not attributable to the Site, for several reasons. First, the agencies do not believe that sufficient evidence has been provided to satisfactorily demonstrate that Wheeler Pit is not the source nor cause of the contamination. The commentors allude that the contamination is from high background levels or other off-site sources. However, sampling to support this statement has not been conducted. In particular, the sampling conducted does not meet the criteria for establishing background water quality pursuant to NR 140.24, WAC.

With respect to whether certain contaminants, such as manganese, were disposed of at the site, historical data was unavailable on specific waste types disposed of at Wheeler Pit. The U.S. EPA 103(c) notification filed by General Motors-Janesville stated that General Motors disposed of organics, inorganics, solvents, heavy metals, and wastes from painting processes, coal-fired boilers, and wastewater treatment processes. Information on the type of wastes produced at the GM Janesville plant in later years is available. In particular, General Motors records available as of 1979 indicate that manganese was a chemical found in the Janesville-GM plant's sludge lacquer, elpo ultrafiltrate, primer sludge, truck enamel sludge, and clarifier sludge. This information was made available to the U.S. EPA and WDNR, by GM, as part of the Janesville Superfund site investigations.

The RI report, prepared by the PRPs, does not support the conclusion that the exceedances of TDS and manganese are not attributable to the Site, directly or indirectly. The RI report (December 1989) states "Background ground water quality indicates elevated total dissolved solids, zinc and nitrate concentrations upgradient from the site. Elevated alkalinity, total dissolved solids, specific conductance and reducing (oxygen deficient) conditions in downgradient ground water suggest possible ground water impacts resulting from the Site, and/or other upgradient sources."

The PRPs state that none of the exceedances pose a significant threat to human health or the environment, thus no action or monitoring is acceptable under State law. It is U.S. EPA's and the WDNR's continued belief that this site poses an actual or potential risk which requires more aggressive action than what is being proposed by the PRPs. In addition, it should be made clear that the decision to take active response measures at this site was made pursuant to the federal Superfund law and the NCP - not State law.

State laws, such as Chapter 160, Wis. Stats. and Chapter NR 140, WAC do come into play in determining whether an alternative is eligible for selection. In order for an alternative, such as groundwater monitoring, to be eligible for selection, that alternative must be both protective of human health and the environment and comply with federal and state environmental requirements (ARARs). Any potential remedy, then, would need to comply with Chapter 160, Wis. Stats. and Chapter NR 140, WAC.

U.S. EPA and the WDNR believe that no action and groundwater monitoring are unacceptable alternatives for the Wheeler Pit Site, because those alternatives are neither protective, nor do they comply with federal and State ARARs. Specifically, the WDNR believes those alternatives do not comply with Chapter 160, Wis. Stats., and Chapter NR 140, WAC.

According to Chapter NR 140, WAC, no action and groundwater monitoring are not acceptable responses where there are ES exceedances of public health and/or public welfare standards at or beyond the point of standards application.

Comment 2

In the alternative, an exemption under NR 140.28 would

be appropriate and is hereby requested since detected concentrations do not pose a threat to public health or welfare.

Response

The WDNR may grant an exemption from taking remedial action, if certain factors pursuant to NR 140.28 are met. In the case of the Wheeler Pit Superfund Site, the WDNR will not grant an NR 140.28 exemption from taking remedial action since this action is being taken pursuant to federal law, not State law. Further, if this action was solely being taken pursuant to State law, the WDNR would not grant an exemption. The PRPs have not sufficiently characterized background, pursuant to NR 140.24. Additionally, the exceedances of chromium, arsenic, 1-4 dichlorobenzene, manganese, TDS and iron are unacceptable from a public health and welfare perspective.

b. NR 504

Comment 3

NR 504 standards have not been uniformly applied to old sites regardless of current conditions.

Response

The WDNR is consistently applying Ch. NR 504, WAC at Superfund sites in Wisconsin. There are many other landfill sites in Wisconsin which are Superfund sites where similar action is taking place or will take place to comply with this regulation and Ch. NR 140, WAC (e.g., Janesville, Onalaska, Hunts Disposal, Hagen Farm and Master Disposal). 504 is also being consistently applied to recent remedial actions where groundwater contamination has been found.

Comment 4

Installation of an NR 504 cap will result in greater risks to human health and the environment and threaten greater impacts to groundwater and air pathways than currently exist. NR 504 would involve removal of existing trees and roots and operating heavy equipment on top of the waste, and would weigh considerably more than the existing cover. Construction of an NR 504 cap could very well prompt exceedances of NR 140 standards, relating to protection of human health. Releases to air could occur if the encapsulated wastes are disturbed.

Response

The commentor concludes that installation of an NR 504 cap will potentially create impacts to groundwater, based on the Warzyn contaminant transport model referenced earlier in this Responsiveness Summary. The catalyst for this model is a rainfall event, which may create a release of VOCs to the groundwater if it rains after the waste has been disturbed during cap construction. The rain would have to come in to contact with the waste in order to cause this groundwater impact. If, as stated in the response to Comment 6, in Section II(b), an engineering control were implemented during construction activities, such as placement of a tarp over the waste to prevent rainwater infiltration, the modeled impact to groundwater would not occur.

The commentor also states that a release to air could occur if the encapsulated wastes are disturbed. U.S. EPA acknowledges that, during the RI, VOCs were released when an encapsulated waste "clod" was disturbed. However, the HNu only detected such a release right next to the waste, not in the ambient air. Air will be monitored during construction activities to assess air quality.

Comment 5

The stabilization process prevents the interaction of waste constituents with water percolating through the fill material, and these substances are not migrating out of the waste.

Response

U.S. EPA acknowledges that the waste constituents appear to have limited mobility at this time. However, based on the uncertainties associated with the stabilization process that may have occurred to some extent at the site and the presence of VOCs, (these uncertainties are outlined in the response to Comment 1 under Section I(a)), U.S. EPA is not confident that infiltrating water cannot interact with contaminants in the waste and believes that future releases are possible.

Comment 6

Even if an NR 504 cap were required by the regulations themselves, an ARARs waiver would be and is hereby requested since (a) the State has not consistently

applied NR 504 requirements to old landfills and (b) compliance (installation of a clay cap) will result in greater risks to human health and the environment than Alternative 2.

Response

While an NR 504.07 cap is not an applicable requirement, it is relevant and appropriate to the site. An ARARs waiver is not appropriate in this instance. The WDNR is consistently applying Ch. NR 504, WAC at Superfund sites in Wisconsin. There are many other landfill sites in Wisconsin which are Superfund sites where similar action is taking place or will take place to comply with this regulation and Ch. NR 140, WAC (e.g., Janesville, Onalaska, Hunts Disposal, Hagen Farm and Master Disposal). See responses to comment 6 in Section II(b) and comment 4 in Section IV(b) for responses to the PRPs' assertion that the selected remedy will result in greater risks to human health and the environment.

Comment 7

Alternative 2 also meets the other criteria for review established by the NCP.

Response

In support of this comment, the commentor evaluates Alternative 2 according to the nine criteria in Table 1 of the PRPs' comments. U.S. EPA does not agree with the commentor that Alternative 2 provides the best balance of the nine criteria because Alternative 2 does not meet the threshold criteria. Alternative 2 is not protective and does not comply with ARARs, which excludes it from selection as a remedy for this site.

V. Deletion

Comment 1

One commentor suggested that an appropriate remedial alternative for the site is the "No Action" alternative and that U.S. EPA delete the Wheeler Pit Site from the National Priorities List (NPL). He further stated that

- 1) there has been no significant release of hazardous constituents from the waste;
- 2) appears that no substantial threat of a release is

present; and

- 3) there are no current risks at the site, and only a highly unlikely noncarcinogenic future risk and carcinogenic risk within the risk range.

Response

U.S. EPA has determined that remedial action is necessary at the Wheeler Pit Site in order to protect the public health or welfare or the Environment. Therefore, the request for deletion of the site from the NPL is premature.

There has been a release of hazardous substances, pollutants or contaminants into the environment. This release includes chlorinated benzene compounds, arsenic, chromium, iron, and manganese into the groundwater.

There also continues to be a substantial threat of a release of hazardous substances, pollutants or contaminants into the environment which may present an imminent and substantial endangerment to the public health or welfare or the environment. This is due to the fact that high concentrations of a large variety of contaminants are "contained" in the waste at the site. The PRPs submitted information describing the fragile nature of the "solidified" material at the site and express concern that this material will both leach into the groundwater and volatilize into the air if the site is disturbed. By their own admission, the breaking up of the "pods", or "clods" that are at the site will create a potentially hazardous situation. This information further substantiates the Agency's concern over the need to take a remedial action in order to protect human health and the environment from a release over the long term. Monitoring will detect any release that may occur. That information will be assessed to determine if further groundwater action is necessary. The cap [along with institutional controls] will help to prevent infiltration into the waste and prevent disturbance of the waste over the long-term. If no remedial action is taken, there is no assurance that waste disturbance can be avoided through the use of a fence and deed restriction alone. The PAL exceedance of Arsenic (As) in the groundwater does, in fact, pose a threat to human health and the environment. The cancer risk due to exposure to As in groundwater is $1.9\text{E}-03$. The total carcinogenic risk due to groundwater exposure, excluding arsenic, is $2.0\text{E}-05$. Although this falls within the range of risk levels that may generally be acceptable levels, U.S. EPA uses an individual lifetime excess cancer risk of 10^{-6} as a point

of departure for established remediation goals for the risks from contaminants at sites. This point of departure has been exceeded at Wheeler Pit.

The NCP envisions that both current and future exposures are to be considered. The future scenario describing exposure to site waste is a reasonable scenario. The risk posed under this scenario is significantly above the noncarcinogenic acceptable level at which no adverse effects occur.

Because there are unacceptable risks due to exposure to contaminants at the site, remedial action is appropriate for the site. Once it has been determined that action is required, ARARs must be met (or a waiver from meeting ARARs granted). Since closure (i.e., NR504) regulations are triggered, the site, at least, needs to be closed in accordance with those regulations.

Although the commentor believes that the future risk at the site is a highly unlikely scenario, U.S. EPA and WDNR disagree. By the PRPs own assessment, they believe that even minimal disturbance of the waste may create a release.

Again, "no action" is an inappropriate response and a limited action alternative will not meet ARARs and is not protective.

Finally, regarding the commentor's request that the site be deleted from the NPL, U.S. EPA has determined that it is not an appropriate time to consider deletion proceedings. U.S. EPA must consider whether any of the following criteria has been met:

- (i) Responsible parties or other persons have implemented all appropriate response actions required;
- (ii) All appropriate Fund-financed response under CERCLA has been implemented and no further response action by responsible parties is appropriate; or
- (iii) The remedial investigation has shown that the release poses no significant threat to public health or the environment and, therefore, taking of remedial measures is not appropriate.

U.S. EPA has determined that none of these criteria have been met since it is determined that taking of remedial measures is appropriate based on the future risks from

the site.

In addition, Section 121 of CERCLA specifies that U.S. EPA will conduct five year reviews at sites where remedial actions result in hazardous substances, pollutants or contaminants remaining on-site. There is a policy that U.S. EPA conduct at least one five-year review before deleting such a site from the NPL. Again, the request for deletion is premature in that even if the action chosen were a "limited action", a five year review would still be required since the site would not provide for unrestricted use.

E. SIGNIFICANT STATE COMMENTS

The WDNR submitted their comments on the selected remedy in a letter to U.S. EPA dated July 20, 1990. All of the State's comments have since been addressed in the Record of Decision. The State of Wisconsin has reviewed the ROD and concurs on the selected alternative.